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The PHOTOFACT Servicer

November 15, 1951 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 16, Nos. 151 & 152

"There is always a way - if we are clever enough to find it." – Anon.

NEW PUBLICATION

Sylvania Electric Products Inc.
"Servicing TV Receivers" - Volume 2
127 Pages. "Wire-O" Bound. Price $2.00

This servicing manual, of handy reference size and bound in such a way as to be extremely useful, provides practical, helpful information on typical television receiver troubles. It also devotes a large number of pages to the presentation of systematic trouble localization techniques.

In order to furnish a representative example for illustration of these explanations, the Sylvania Model No. 1-366 television receiver has been chosen for some of the specific procedures. The information in the book, however, is readily applicable to almost all television receivers on the market.

Chapter 1 is entitled: "The Present State of Television," and includes a basic explanation of the television standards in the formation of the composite signal.

Chapter 2, entitled: "The Television Receiver," is a functional break-down of a typical receiver, presenting an explanation of the signal path through the receiver, with a discussion of each of the circuit functions accompanied by schematics of the various major portions.

Chapter 3 is devoted to trouble shooting and is divided into three portions: Sectionalization of the Defective Portion of the Receiver; Isolation of the Defective Stage; and Location of the Defective Components. This section contains many typical test patterns showing common faults and their repair techniques. Also contained are trouble shooting charts for each of the sections.

The 4th Chapter is devoted to alignment and adjustment and is a general discussion on alignment techniques for both the video and sound channels. A short discussion of safety precautions is included in Chapter 5. In the back of the book is a large schematic diagram of the Sylvania Model No. 1-366 chassis for reference purposes.

This book, which is available through your Sylvania distributor, is a valuable addition to the library of any service shop.

TRADE NEWS

Littlefuse "One-Call Kit"

This kit, pictured herewith, provides service men with the nine most needed types of TV fuses, and six snap-on TV fuse holders for replacing blown pigtail types. There are 45 fuses in all, packed five each, in metal boxes. The entire kit is housed in a hinged plastic box, 2-1/2 x 4-1/2 inches in size. It makes an ideal bench or box kit, with a table of contents on the bottom, for re-ordering purposes. This kit is now available at your Littlefuse Distributor.

Merit #1000 "TV" Kit

The Merit Coil and Transformer Corp., are now shipping to jobbers the new #1000 "TV" Kit (see accompanying illustration) which contains three major

components for conversion, replacement and improvement of set performance.

The components are, one HVO-7, a type of flyback transformer which can be mounted over or under the chassis, horizontally, vertically, or on the side wall of the hi-voltage cage; one MWC-1, a width-linearity coil with AGC winding which matches the HVO-7; and one MDF-70 Cosine Wound Deflection Yoke.

Included with the Kit are a technical data sheet on the components, a sheet which explains the Cosine Yoke and the Merit Conversion Procedure Sheet.

* * *

Lawrence-Paramount Color Television Tube

Recent publicity on an entirely new type of color television picture tube has created a great deal of interest in the field. Because of the many misconceptions in the stories released by some of the widely circulated news magazines, we are presenting herewith excerpts from a publicity release prepared by the president of Chromatic Television Laboratories, Inc., an affiliate of Paramount Pictures Corporation, for whom Dr. Lawrence has developed this new tube.

We are bringing this information to you, since we are certain that many of your customers have questioned you about this tube. We quote from the publicity release:

Questions and Answers
About the New Lawrence-Paramount Tri-Color,
Direct View Color Television Tube

Q. What does the Lawrence-Paramount tube do?

A. This tube will receive color transmission either under the existing commercial standards set up by the Federal Communications Commission, or any of the other presently proposed systems for color television transmission. The present commercial color standards are generally known as the CBS standards, as CBS originally advocated similar standards. The tube can receive one color system or another and can automatically receive either color or black and white.

Q. Can the Lawrence-Paramount tube be used in existing black and white sets?

A. The Lawrence-Paramount tube can be inserted into any good quality black and white receiving set and, with the addition of an adapter plus minor circuit adjustments, will receive both black and white and color transmission under present commercial color standards.

Q. What will the cost of producing new television sets be, with the Lawrence-Paramount tube installed, as compared with existing black and white sets?

A. Our best estimate at this time is that the new sets will cost only about 15% more to produce than sets of the same size receiving black and white. Each color system added to present commercial color standards will require additional circuits in the set and this results in additional costs.

Q. Are there any limitations on the size of the screen using the Lawrence-Paramount tube?

A. There are no limitations on the size of the screen using the Lawrence-Paramount tube other than those which are now encountered in the ordinary black and white tubes.

Q. When will these tubes be in production?

A. The Lawrence-Paramount tubes are now in the process of production at our newly acquired Stamford, Connecticut plant. This plant has been in production on black and white tubes and is now being converted to production of color tubes.

Q. What is the distinguishing feature of this tube as compared to the other color tubes proposed?

A. (1) The present tube is a single gun tube. Many interesting effects can be produced by the addition of other guns. These can be handled at much less cost than with other proposed tubes due to the acceleration lens.

(2) There is no masking in the tube, which permits full utilization of all the electrons. This is a distinct and basic advance in the electronic art. Masking, in some tubes, wastes up to 80% of the electrons, resulting in difficult brightness problems.

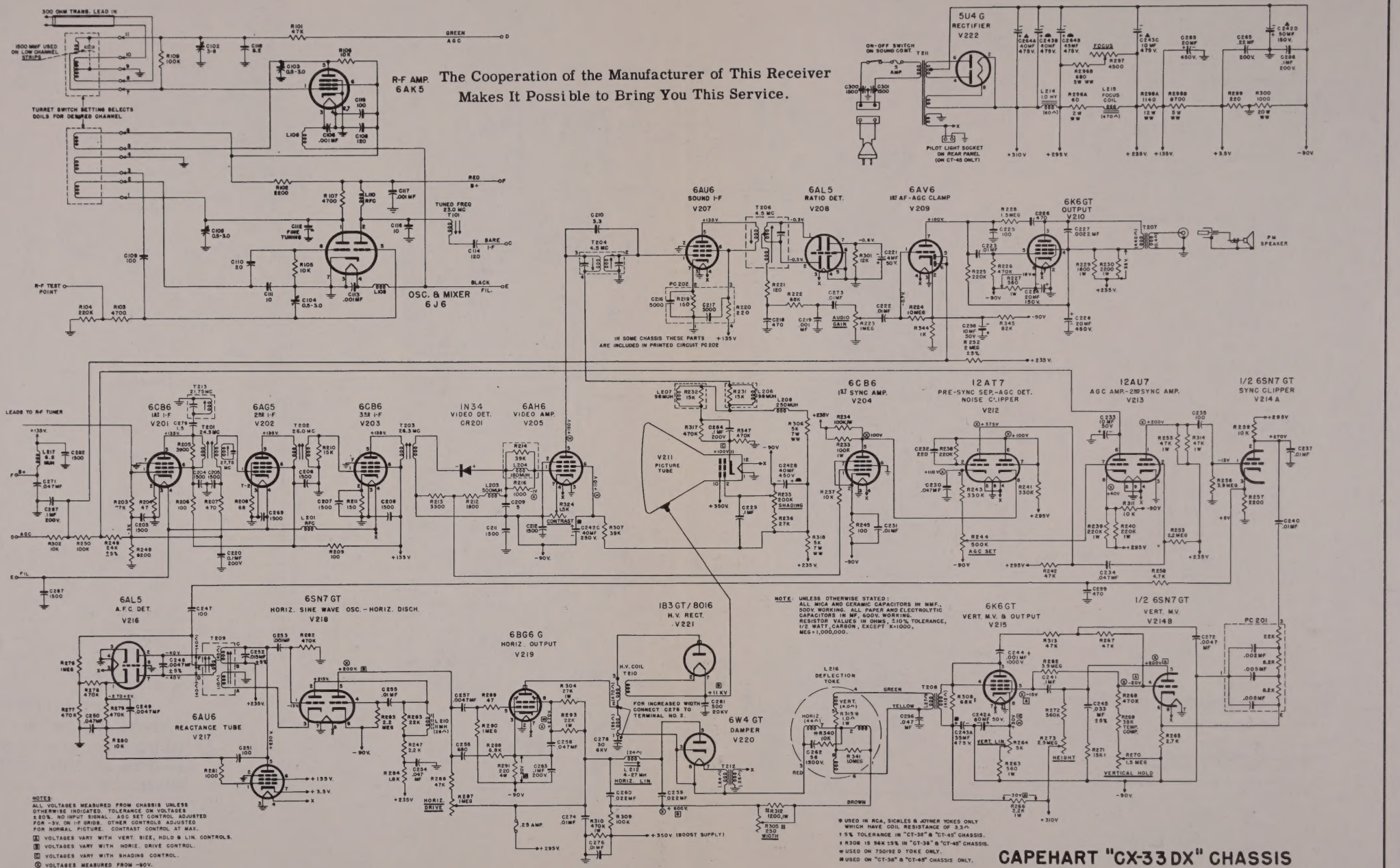
(3) There is no major problem of mechanical registration of the colors within the tube. The manufacturing tolerance of 10 to 1, unique with this tube, permits simplicity of manufacture and the use of conventional production tooling techniques.

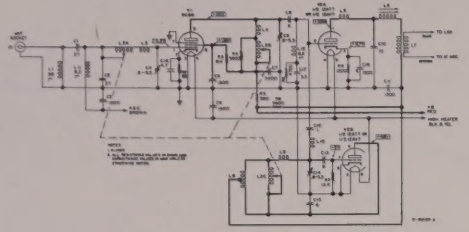
Q. Other than the cheaper cost of the tube, are there any other economies inherent in the use of the Lawrence-Paramount tube?

A. Yes. The tube makes use of post deflection acceleration and focusing principles which, in turn, make possible design simplifications and economies in the standard television deflection circuits.

Q. How does the Lawrence-Paramount tube work?

A. The tube design applies for the first time, a new concept of electron optics and permits precise control and direction over the electrons in the tube. The tube operates on a post deflection acceleration focusing principle. The post deflection acceleration voltages are applied to a grid located behind the viewing face of the tube which accelerate and direct the electrons to intercept the appropriate color phosphors deposited on the viewing face. In the present tube, the color phosphors are laid down on the viewing face in narrow parallel strips - - red green, and blue. The strips and associated wire grid can run either horizontally or vertically. They do not necessarily have to be laid down in strips.


The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.
R-F AMP. 6AK5
OSC. & MIXER 6J6
5U4 G RECTIFIER V222
6AU6 SOUND I-F V207
6AL5 RATIO DET. V208
6AV6 1ST AF-AGC CLAMP V209
6K6GT OUTPUT V210
6CB6 1ST I-F V201
6AG5 2ND I-F V202
6CB6 3RD I-F V203
IN34 VIDEO DET. CR201
6AH6 VIDEO AMP. V205
6CB6 1ST SYNC AMP. V204
12AT7 PRE-SYNC SEP.-AGC DET. NOISE CLIPPER V212
12AU7 AGC AMP.-2ND SYNC AMP. V213
1/2 6SN7 GT SYNC CLIPPER V214 A
6AL5 A.F.C. DET. V216
6SN7GT HORIZ. SINE WAVE OSC.-HORIZ. DISCH. V218
6AU6 REACTANCE TUBE V217
6BG6 G HORIZ. OUTPUT V219
1B3GT/8016 H.V. RECT. V221
6W4 GT DAMPER V220
6K6GT VERT. M.V. & OUTPUT V215
1/2 6SN7 GT VERT. M.V. V214B
V211 PICTURE TUBE
CAPEHART "CX-33 DX" CHASSIS



R. F. TUNER SCHEMATIC DIAGRAM

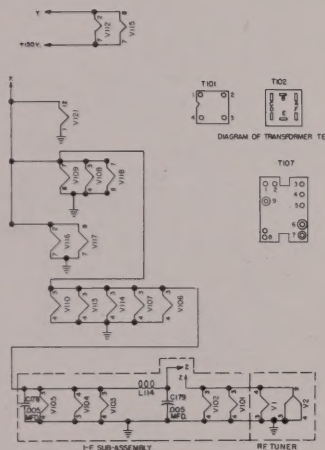


DIAGRAM OF TRANSFORMER TERMINALS.

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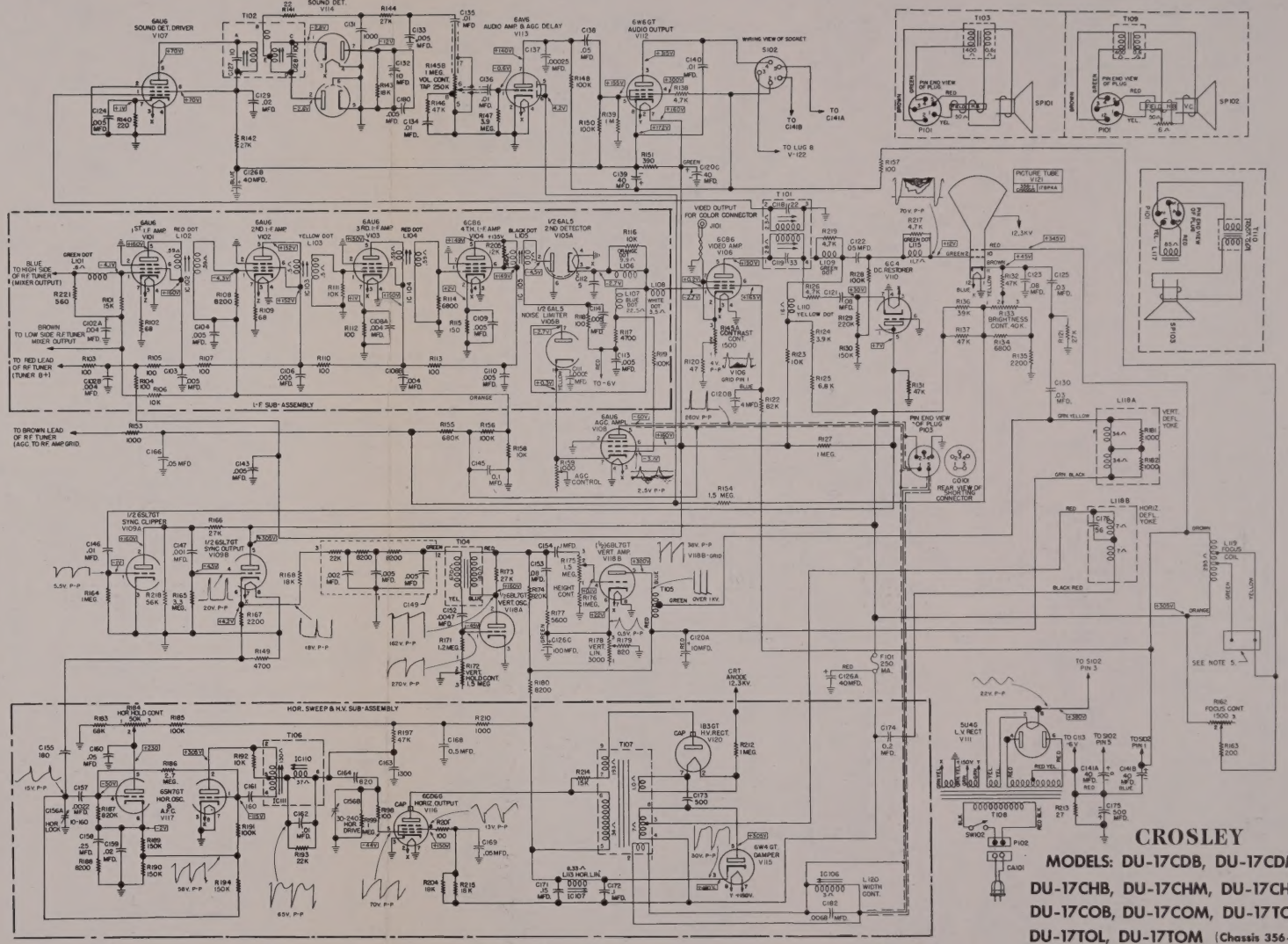

NOTES:

1. ALL VOLTAGES MEASURED WITH AN ELECTRONIC VOLTMETER CONNECTED FROM SOCKET LUG TO CHASSIS.
2. SUPPLY VOLTAGE 117V.60 CYCLE AC.
3. K - 1000
4. ALL CAPACITANCE VALUES IN MMF. & ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE NOTED.
5. SOME CR TUBES REQUIRE CONNECTION TO GREEN TAP TO OBTAIN FOCUS.

CROSLEY

MODELS: DU-17CDB, DU-17CDM, DU-17CHB, DU-17CHM, DU-17CHN DU-17COB, DU-17COM, DU-17TOB DU-17TOL, DU-17TOM (Chassis 356-1)

PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

SET 152 FOLDER 1A

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PHOTOFACT* Folder

*TRADE MARK

ANDREA MODELS C-VL17
T-VL17, 2C-VL17 (Ch. VL17)

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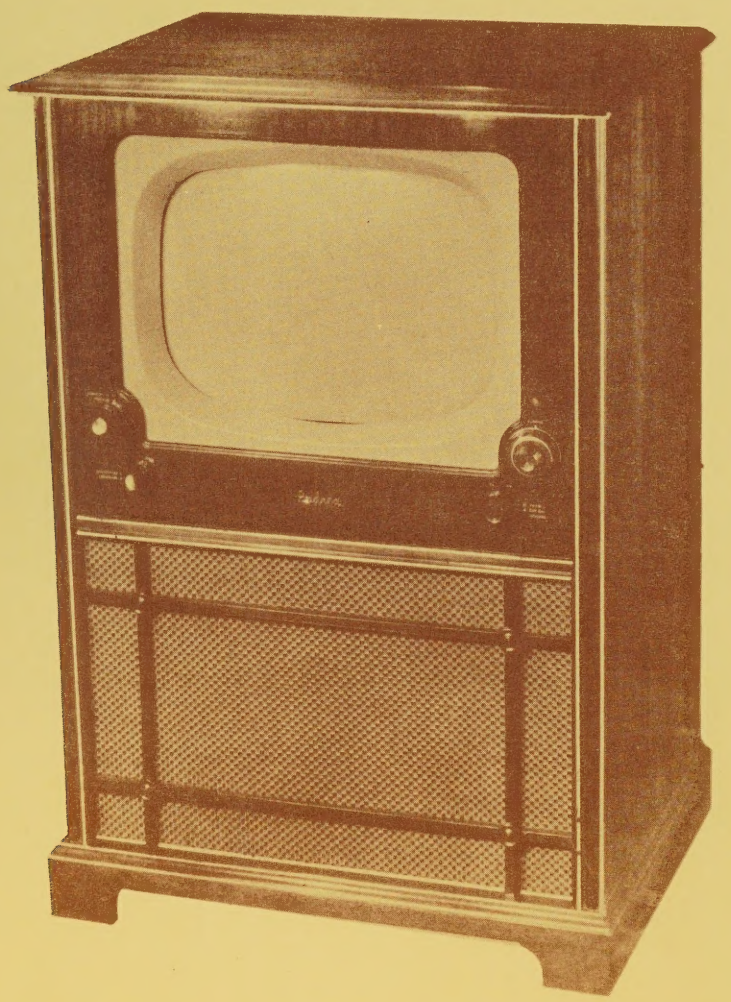

MODEL C-VL17

ANDREA MODELS C-VL17
T-VL17, 2C-VL17 (Ch. VL17)

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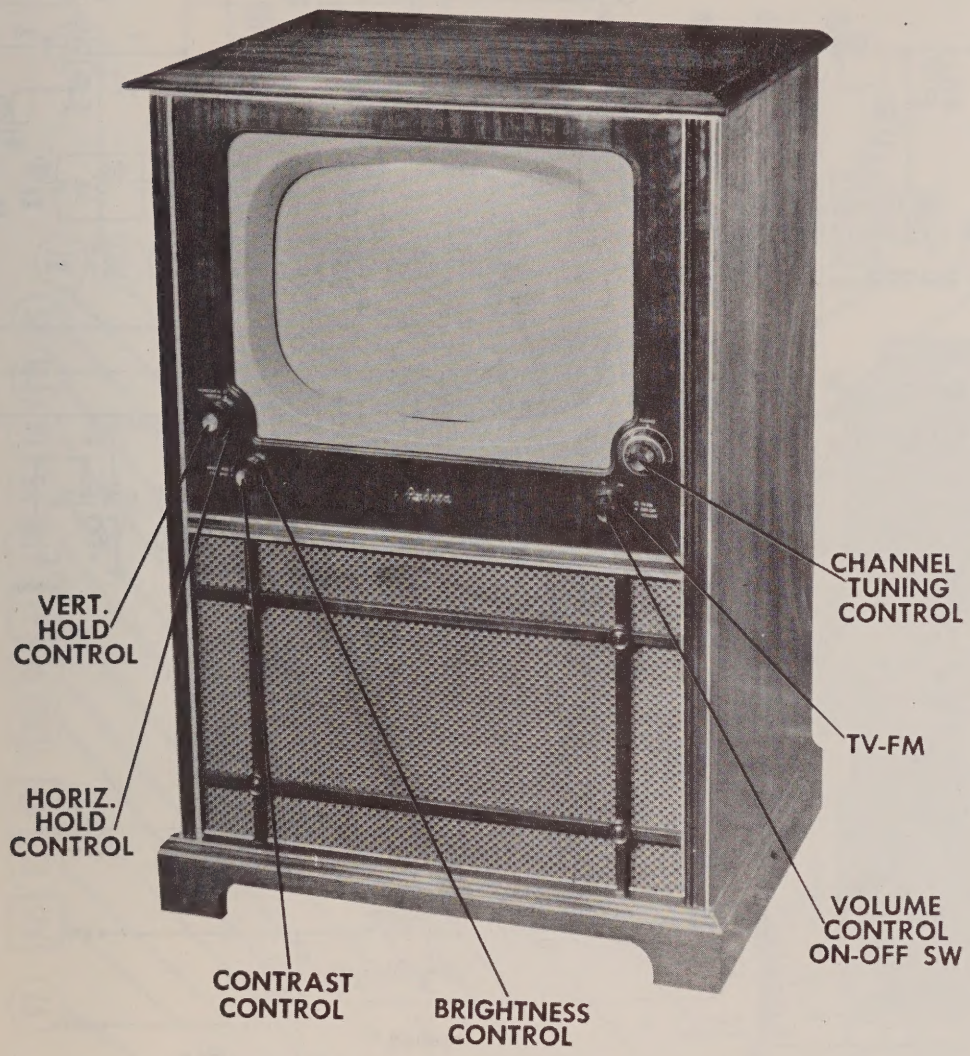

ANDREA MODELS C-VL17
T-VL17, 2C-VL17 (Ch. VL17)

ANDREA MODEL C-VL17

TRADE NAME	Andrea, Models C-VL17, T-VL17, 2C-VL17 (Ch. VL17)
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza North, Long Island City, N. Y.
TYPE SET	TV-FM Receiver
TUBES	Twenty four
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE	44-217MC (Continuous Tuning)
RATING	(TV) 1.95 Amp. at 117 Volts AC (FM) 1.2 Amp. at 117 Volts AC

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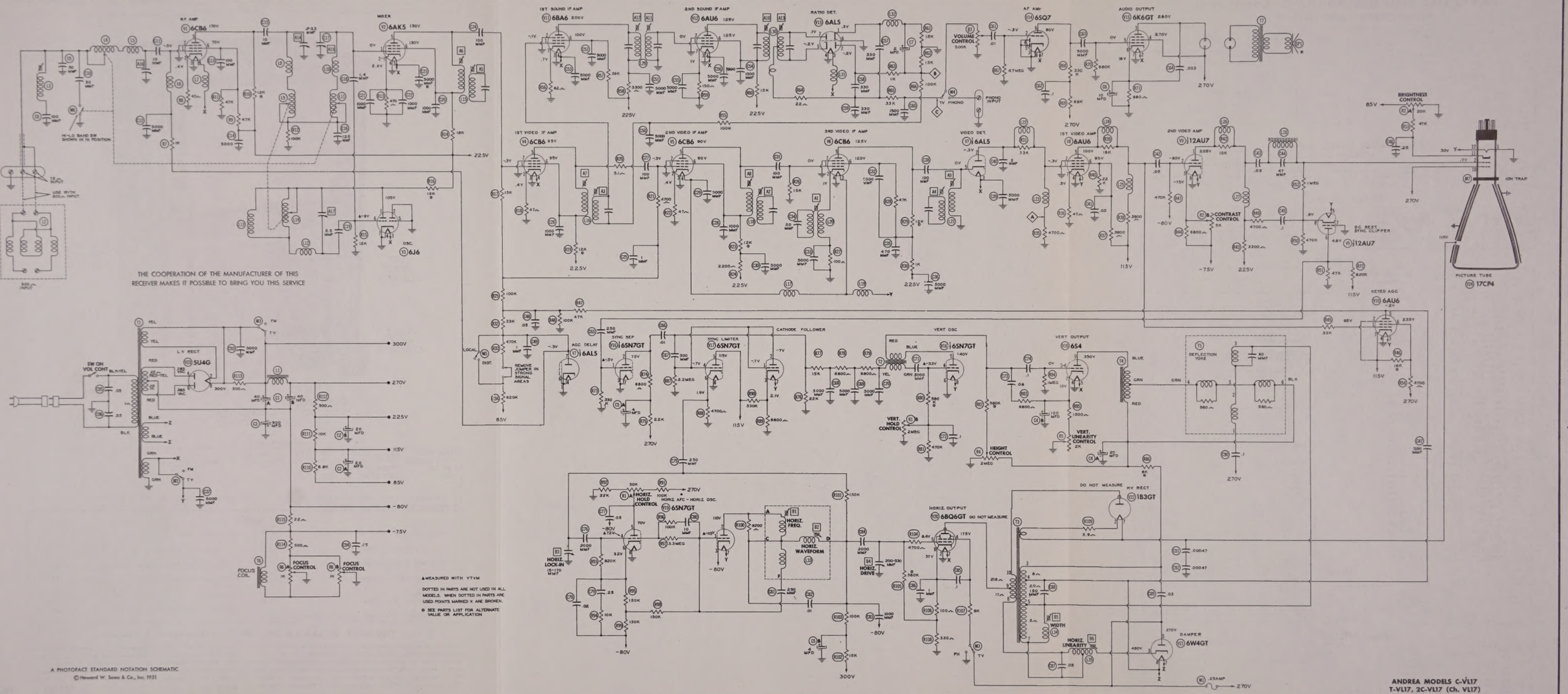

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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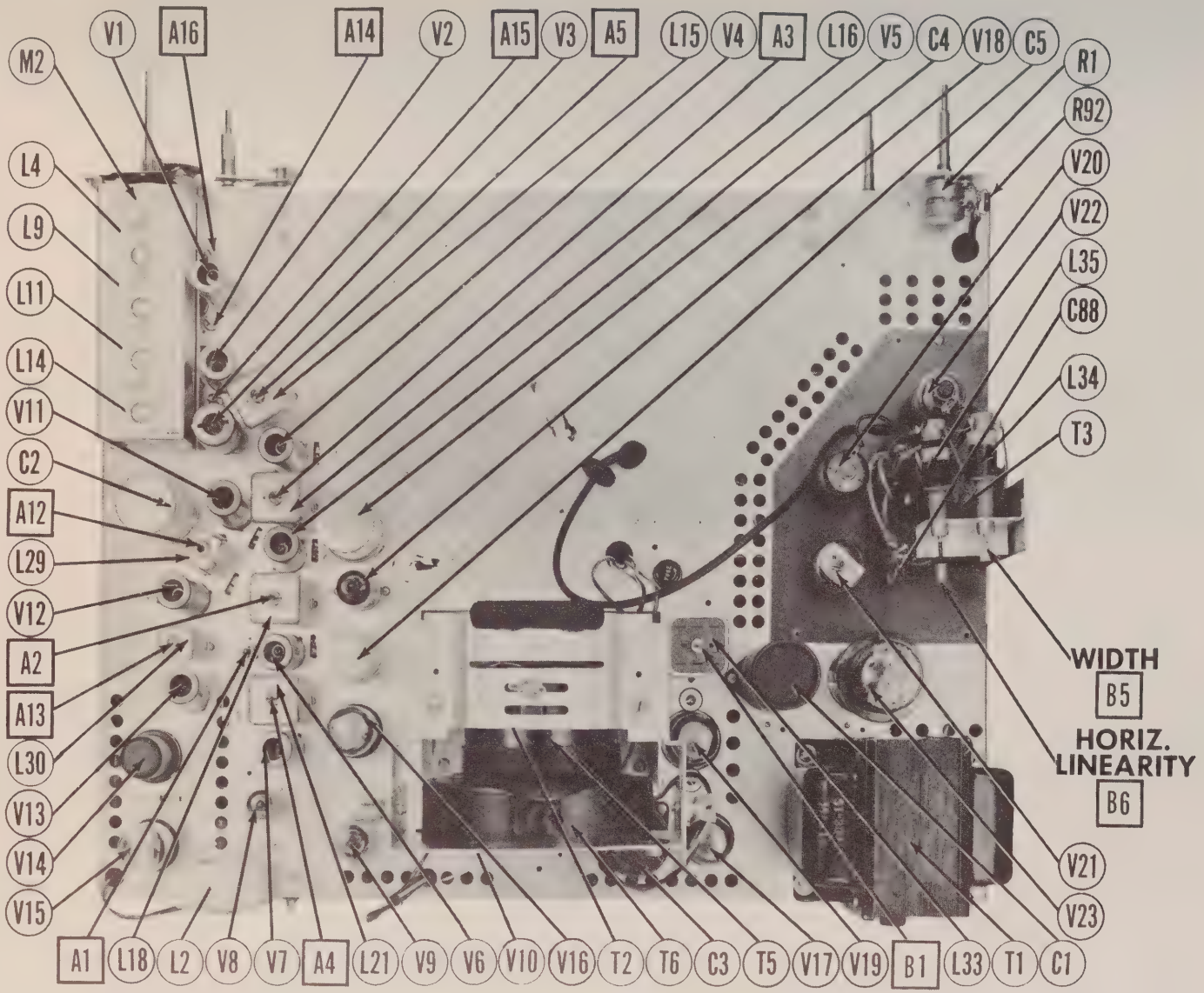

CHASSIS TOP VIEW

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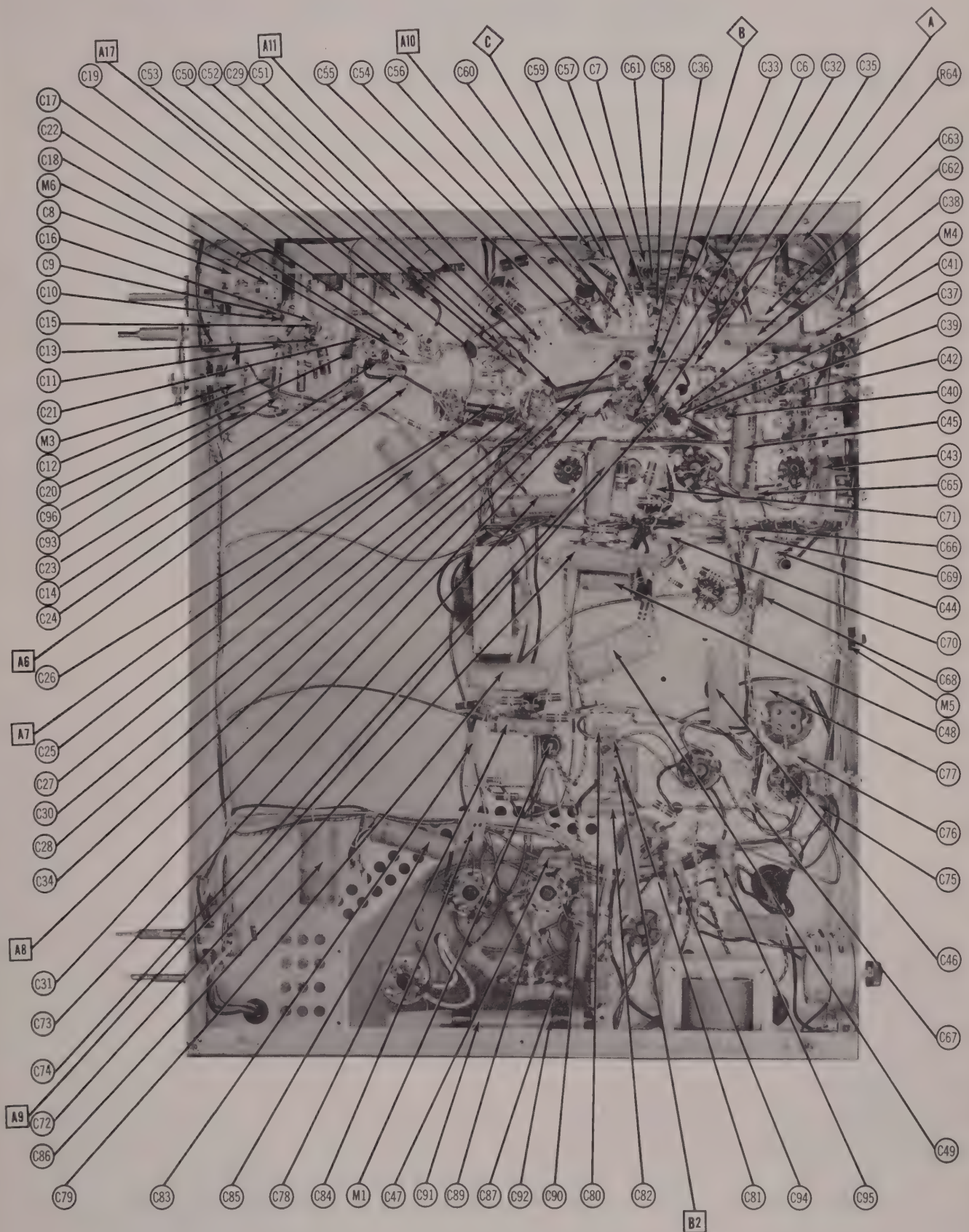
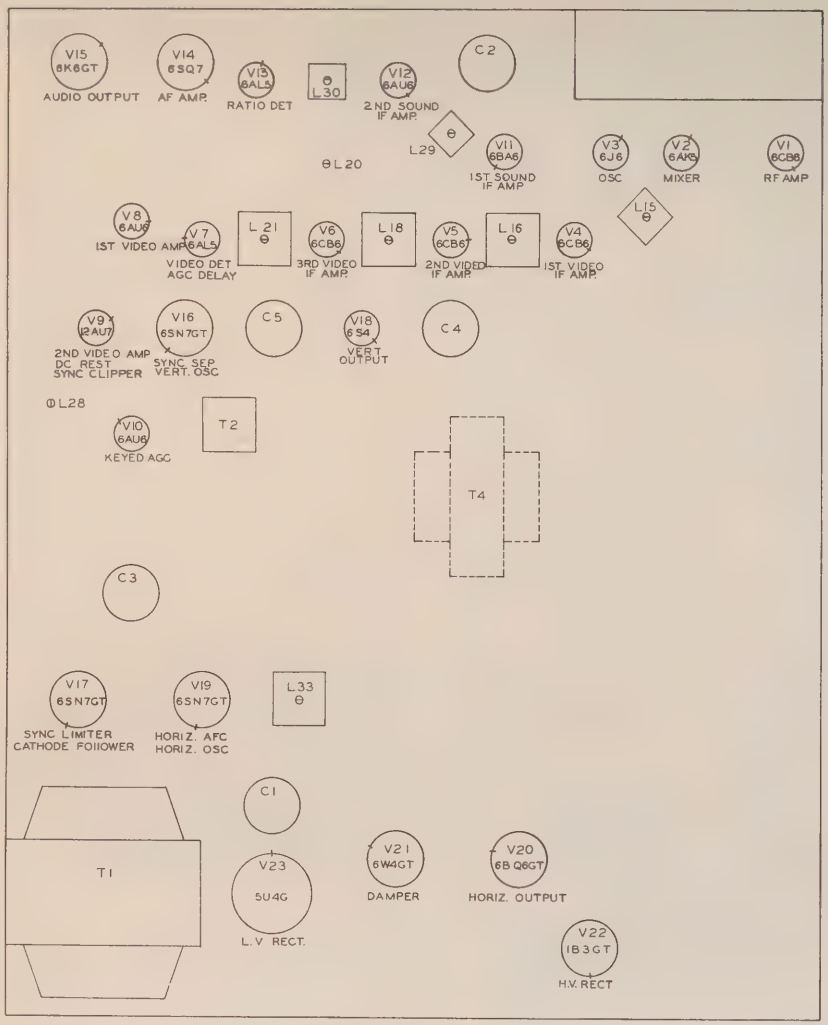
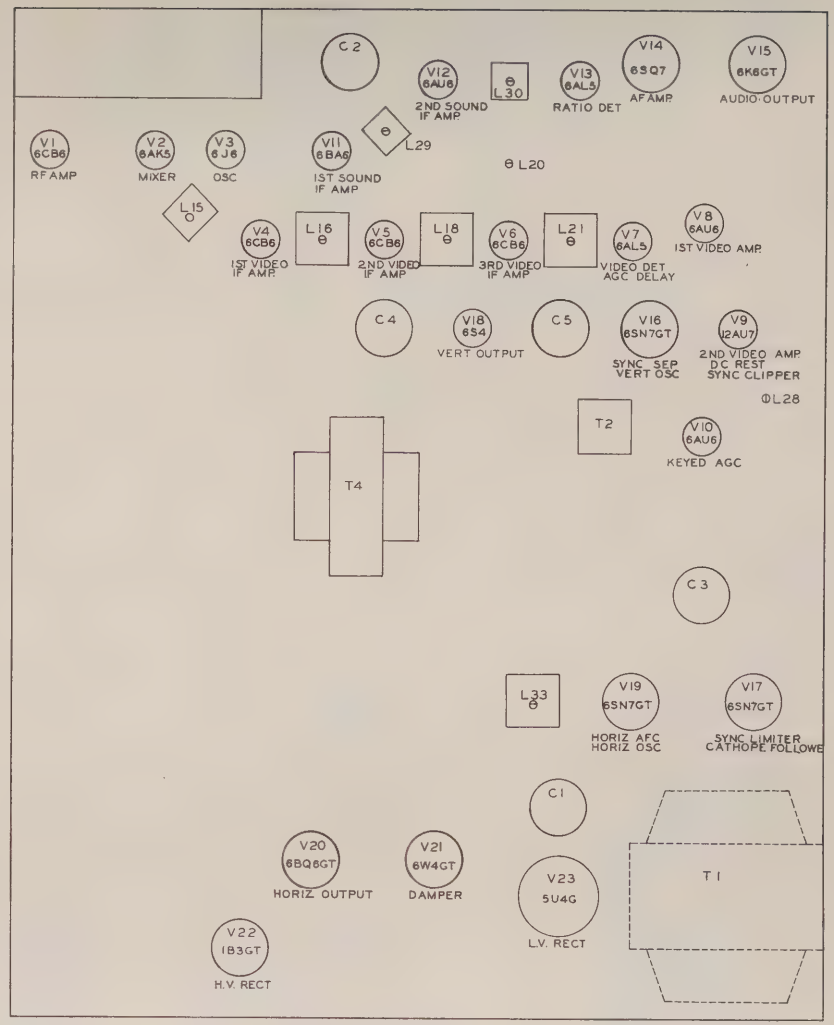
T-VL17, 2C-VL17 (Ch. VL17)



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ANDREA MODELS C-VL17, T-VL17, 2C-VL17 (Ch. VL17)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V19), from its socket.

VIDEO IF ALIGNMENT

Remove the local oscillator tube, (V3), from its socket to prevent the possibility of erroneous indications.
Connect one end of a 10KΩ potentiometer to B- (-80V), and the other end to chassis. Connect the center arm to the ungrounded lead of C49. Adjust the potentiometer to read -.5Volt, measured by a VTVM connected between the potentiometer center arm and chassis.
Keep the output of the sweep generator low enough to prevent overdriving the IF stages. To check for overdriving increase the output of generator. If the stages are not being overdriven the amplitude of the response curve will increase.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over mixer tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.7MC	Any	Vert. Amp. to Point (A). Low side to chassis.	A1, A2, A3	Adjust for MINIMUM marker indication at the 21.7MC point on response curve.
2.	"	"	"	27.7MC	"	"	A4, A5	Adjust for MINIMUM marker indication at the 27.7MC point on response curve.
3.	"	"	"	23MC 26.2MC	"	"	A6, A7 A8, A9	Adjust for response curve similar to figure 1, with markers as shown. The low frequency slope is affected by A6, the high freq. slope by A8 and the flatness of the center region by A7 and A9.

SOUND IF ALIGNMENT

Reduce the AGC bias to zero, (turn potentiometer to minimum, do not disconnect the potentiometer.)
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	500MMF	High side to pin 1, (Grid) of 6AU6, (V12). Low side to chassis.	21.7MC (1MC SWP)	21.7MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A10	Disconnect stabilizing capacitor C7. Adjust for maximum amplitude and symmetry as per figure 2.
5.	"	High side to pin 1, (Grid) of 6BA6, (V11). Low side to chassis.	21.7MC	"	"	"	A11, A12	"
6.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A13	Reconnect capacitor C7. Adjust A13 so 21.7 MC occurs at center of "S" curve as per fig. 3. SLIGHTLY retouch A10 for maximum amplitude and straight ness of crossover lines.

TUNER ALIGNMENT

The following equipment, with specifications given, is required to align the tuner in this receiver.
Sweep generator covering all FM and TV channel frequencies.
Sweep width of at least 10MC, maximum output at least 1 volt.
Oscilloscope with sensitivity of .01 rms. volts per inch, vertical amplifiers flat to 150KC.
Wide band amplifier with flat response from 18 to 32MC., with a gain of 70, and a detector at the output.
Under no circumstances should alignment of the tuner be attempted without a full complement of the above equipment.

RF ALIGNMENT

Replace the local oscillator tube, (V3), in its socket.
Leave the 10KΩ manual contrast control, used during video IF alignment, connected. Set the control to zero AGC voltage.
Connect a 220Ω resistor between pins 5 and 6 of 6AK5 (V2).
Remove the first video IF amplifier tube, (V4), from its socket.
Connect the input of the wide band amplifier between pin 5 of V2 and chassis.
Disconnect C11 from pin 1 of V1.
Turn the tuning control to fully clockwise. Replace the dial so the radial index mark on the dial and the 1 in 108 are straight up, (12: o'clock with set in normal viewing position.
Make a mark on the chassis to use an index.
During steps 10, 11, and 12 the sweep generator is connected to the antenna terminals through a 10DB resistance attenuator designed to operate at VHF and having a characteristic resistance of 72 ohms.
Connect the synchronized sweep voltage from the signal generator to the hoirzontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	500MMF.	High side to pin 1, (Grid) of 6CB6, (V1). Low side to chassis.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. Amp. to output of wide band amplifier. Low side to chassis.	A14, A15	Adjust for response curve similar to figure 4. Attenuate sweep generator to prevent overloading.
8.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	L8, L10	Adjust end inductors by unsoldering wires and sliding the wires aling each other for response similar to figure 5. Resolder the wires.
9.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all channels for response curve between figures 4 and 5. If necessary make slight compromise adjustments of A14 and A15 on the low band channels, and L8 and L10 on the high band channels. If any adjustment is changed recheck all channels.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			

ALIGNMENT INSTRUCTIONS (CONT.)

10.	10DB attenuator (see instructions above.)	Across antenna terminals	57MC (10MC SWP)	55.25MC 57.75MC	2	Vert. Amp. to output of wide band amplifier Low side to chassis.	A16	Adjust for response curve similar to figure 4.
11.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	L5	Adjust end inductor as in step 8 for response similar to figure 5.
12.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Increase bias to 3 volts. Check all channels for response curve between figures 4 and 5. If necessary make slight compromise adjustment of A16 on the low channels and L5 on the high channels. If either adjustment is changed recheck all channels.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			

OSCILLATOR ALIGNMENT

Remove the 220Ω resistor, and replace V4.
Remove the wide band amplifier.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Direct	Across antenna terminals	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	L13	Adjust to place video marker at 50% on response curve as shown in figure 6.
14.	"	'	57MC (10MC SWP)	55.25MC 59.75MC	2		A17	Adjust to place video marker at 50% on response curve as shown in figure 6. Repeat step 13.
15.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Adjust tuning control to place video marker at 50% on each channel and check dial calibration. If necessary make slight compromise adjustment of L13 on high channels and A17 on low channels. If A17 is changed, L13 will require readjustment. However adjustment of L13 will not have appreciable effect on the adjustment of A17.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			

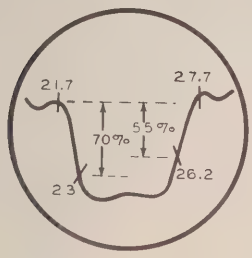


FIG.1

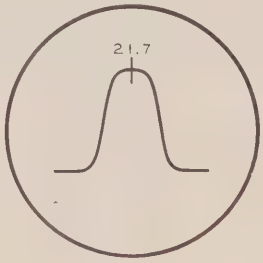


FIG. 2

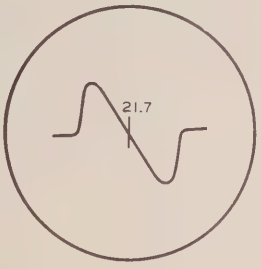


FIG. 3

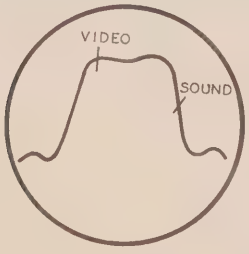


FIG.4

FIG. 5

RESISTANCE MEASUREMENTS

RESISTANCE READINGS

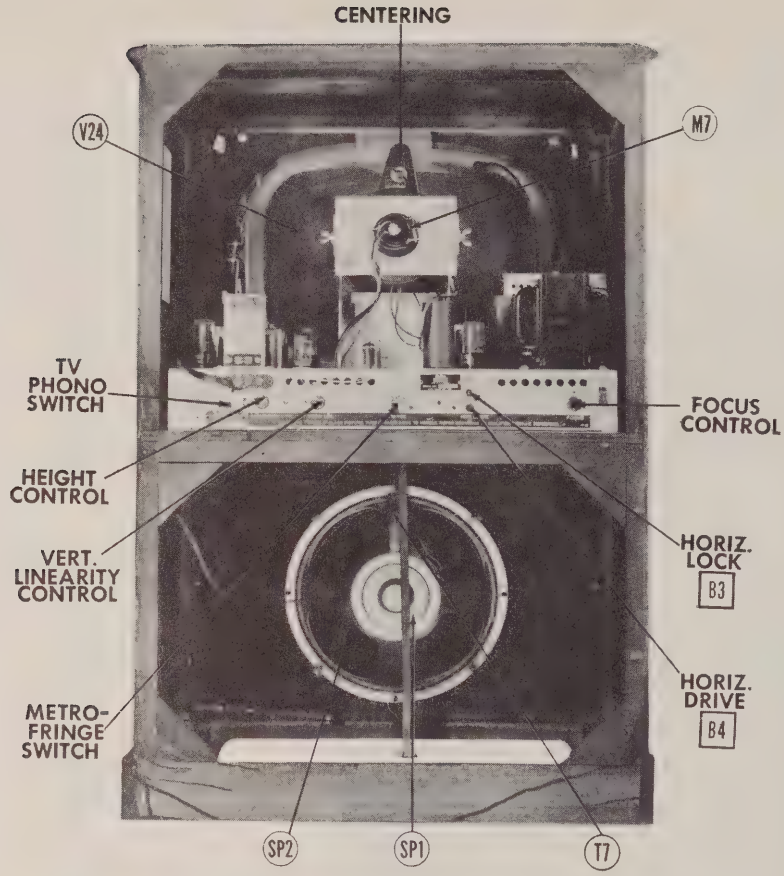
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	115KΩ	47Ω	0Ω	1.2Ω	†12KΩ	†25KΩ	0Ω		
V 2	6AK5	100KΩ	470Ω	.1Ω	0Ω	†18KΩ	†18KΩ	470Ω		
V 3	6J6	†18KΩ	0Ω	.1Ω	0Ω	0Ω	12KΩ	0Ω		
V 4	6CB6	215KΩ	47Ω	0Ω	.1Ω	†12KΩ	†12KΩ	0Ω		
V 5	6CB6	215KΩ	47Ω	0Ω	.1Ω	†14KΩ	†14KΩ	0Ω		
V 6	6CB6	15KΩ	100Ω	.1Ω	0Ω	†13KΩ	†48KΩ	0Ω		
V 7	6AL5	0Ω	4.7KΩ	.1Ω	0Ω	.2Ω	0Ω	115KΩ		
V 8	6AU6	4.7KΩ	0Ω	.1Ω	0Ω	†13KΩ	†11KΩ	47Ω		
V 9	12AU7	†3.3KΩ	470KΩ	900Ω	.1Ω	.1Ω	†47KΩ	0Ω	470KΩ	0Ω
V 10	6AU6	†47KΩ	†7.5KΩ	.1Ω	0Ω	150KΩ	†4.7KΩ	†7.5KΩ		
V 11	6BA6	215KΩ	0Ω	0Ω	.1Ω	†3.3KΩ	†39KΩ	82Ω		
V 12	6AU6	.2Ω	0Ω	0Ω	.1Ω	†15KΩ	†15KΩ	150Ω		
V 13	6AL5	15KΩ	16KΩ	.1Ω	0Ω	530KΩ	0Ω	530KΩ		
V 14	6SQ7	0Ω	4.7Meg	0Ω	0Ω	0Ω	†400KΩ	.1Ω	0Ω	
V 15	6K6GT	0Ω	.1Ω	†500Ω	†110Ω	680KΩ	680KΩ	0Ω	680Ω	
V 16	6SN7GT	330KΩ	†29KΩ	0Ω	825KΩ	#800KΩ	0Ω	0Ω	.1Ω	
V 17	6SN7GT	2.2Meg	2.2Meg	6.8KΩ	2.2Meg	†7.5KΩ	4.7KΩ	.1Ω	0Ω	
V 18	6S4	Inf.	1.8KΩ	900KΩ	0Ω	.1Ω	900KΩ	Inf.	Inf.	#9.5KΩ
V 19	6SN7GT	300KΩ	†115KΩ	400Ω	1Meg	†50KΩ	300KΩ	.1Ω	0Ω	
V 20	6BQ6GT	Inf.	0Ω	330Ω	†8KΩ	560KΩ	560KΩ	.1Ω	430Ω	Top Cap #20Ω
V 21	6W4GT	†110KΩ	Inf.	700KΩ	Inf.	†110KΩ	150KΩ	#2.4Ω	#2.4Ω	
V 22	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #235Ω
V 23	5U4G	Inf.	15KΩ	Inf.	360Ω	Inf.	360Ω	Inf.	15KΩ	
V 24	17CP4	0Ω	1.5Meg	PIN 10 †110Ω	PIN 11 †50KΩ	PIN 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION
HIGH-LOW BAND SWITCH IN LOW BAND POSITION
LOCAL AND DISTANCE SWITCH IN LOCAL POSITION
TV FM SWITCH IN TV POSITION
TV PHONO SWITCH IN TV POSITION
† MEASURED FROM PIN 8 OF V23
# MEASURED FROM PIN 3 OF V21

DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove nine wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Remove four 7/16" hex head bolts from chassis. Remove chassis.
6. Remove four 5/16" hex nuts from speaker. Remove speaker.

NOTE FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Pre-set the adjustments as follows:

Turn the horizontal lock trimmer, (B3), one fourth turn counter-clockwise from tight.

Turn the horizontal drive trimmer, (B4), one fourth turn counter-clockwise from tight.

Turn the horizontal phase slug, (B2), three turns clockwise from fully out.

Turn the horizontal frequency slug (B1), so the brass screw extends 1 inch above the can.

Connect the vertical input lead of an oscilloscope through a 47KΩ resistor to terminal C of L33.

Adjust B2 until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 6.

Adjust B1 until the picture synchronizes horizontally.

If the peaks of the waveform do not remain of equal height, readjust B2.

Adjust the drive trimmer, (B4), counter-clockwise as far as possible without crowding or foldover appearing in the picture. If the picture falls out of synchronization, repeat the adjustments of B1 and B2.

Adjust the width slug, (B5), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B6), until the picture is symmetrical from left to right.

Since both width and horizontal linearity are effected by the drive trimmer, it may be necessary to adjust B4, B5, and B6 alternately for best results.

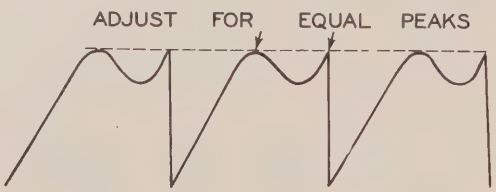
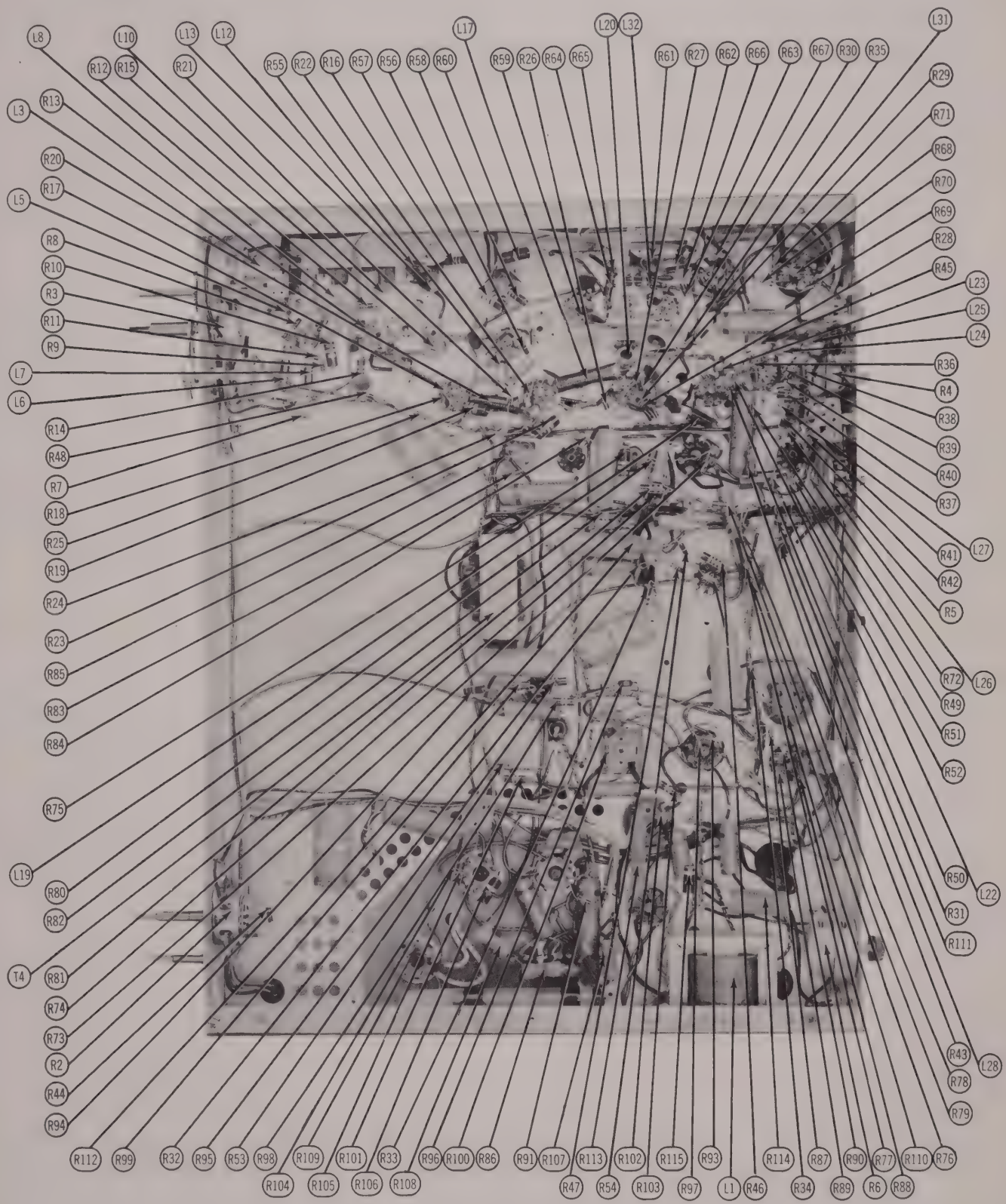


FIG. 6



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6CB6	6CB6	7CM	
V2	Mixer	6AK5	6AK5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Detector-AGC Delay	6AL5	6AL5	6BT	
V8	1st. Video Amp.	6AU6	6AU6	7BK	
V9	2nd. Video Amp.-DC Restored-Sync. Clipper	12AU7	12AU7	9A	
V10	Keyed AGC	6AU6	6AU6	7BK	
V11	1st. Sound IF Amp.	6BA6	6BA6	7BK	
V12	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	AF Amplifier	6SQ7	6SQ7	8Q	
V15	Audio Output	6K6GT	6K6GT	7S	
V16	Sync. Separator-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Sync. Limiter - Cathode Follower	6SN7GT	6SN7GT	8BD	
V18	Vert. Output	6S4	6S4	9AC	
V19	Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V20	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: ANDREA PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V24	17CP4	17CP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	500	HCE-1310	AFH2-72		UP4450		TVL-3830	▬ Filter
B	40	500							▲ Filter
C2A	20	450	HCE-1320	AFH2-69		UP2250		TVL-2750	▲ Decoupling
B	20	450							▲ Decoupling
C3	300	100	HCE-1333			UPE30015		TVL-1434	Bias Filter
C4A	20	450	HCE-1319	AFH2-93		UPT245-1010		TVL-2810	▲ Vert. Output Dec. ▲ Vert. Output Cathode
B	100	100							■ Sync. Sep. Dec.
C5A	4	450	HCE-1318	AFH2-47		UPT4D45		TVL-2750	▲ Horiz. Osc. Dec.
B	4	450							Audio Output Cathode
C6	10	25	HCE-1329	PRS25/10		BR102A		TVA-1204	Stabilizing Cap.
C7	2	25	HCE-1302	PRS150/4		BBR-2-50T		TVA-1201	Fixed Padder
C8	100		HCC-1933	SI100N750	TCN-100		N750L-101	5TCU-T1	Dixed Trimmer
C9	50		HCC-1929						Fixed Trimmer
C10	30		HCC-1934	SI30		5W5Q9	GP1K-300		Fixed Trimmer
C11	10		HCC-1923	SI10N750	TCN-10		N750K-100	5TCU-Q1	RF Coupling
C12	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C13	100		HCC-1933	SI100N750	TCN-100		N750L-101	5TCU-T1	RF Ampl Screen
C14	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C15	100		HCC-1923-1	SI100N750	TCN-100		N750L-101	5TCU-T1	RF Coupling
C16	125		HCC-1930						Mixer Grid Filter
C17	1.5-3.3		HCV-3118						Variable Trimmer
C18	1.4		HCC-1931				N750K-IR4		Osc. Coupling
C19	5.5		HCC-1925				N750K-5R5		Osc. Grid Cap.
C20	1000		HCC-1932	BPD-001	DD-102	1W5D1	801-001	5HK-D1	Mixer Decoupling
C21	1000		HCC-1938	BPD-001	DD-102	1W5D1	801-001	5HK-D1	Mixer Cathode
C22	1000		HCC-1938	BPD-001	DD-102	1W5D1	801-001	5HK-D1	Mixer Cathode
C23	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Mixer Fil. *
C24	100		HCC-1923-1	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C25	1	100	HCT-1027-1	485-1.0		GT4W1			AGC Filter
C26	1000		HCC-1932	BPD-001	DD-102	1W5D1	801-001	5HK-D1	1st. Video IF Dec.
C27	100		HCC-1923-1	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C28	1000		HCC-1932	BPD-001	DD-102	1W5D1	801-001	5HK-D1	2nd. Video IF Dec.
C29	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Fil.
C30	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C31	100		HCC-1923-1	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C32	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Screen
C33	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Cathode
C34	50						N750K-500		Fixed Trimmer
C35	470		HCC-1935	SI470	D6-471	5W5T5	GP2K-471	5GA-T47	RF Bypass
C36	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C37	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Fil. Bypass
C38	100		HCC-1922-1	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C39	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video Det. Fil.
C40	4.7		HCC-1903	SI5NP0	TCZ-4.7		NP0K-4R7		Video Det. Filter
C41	.05	400	HCT-1003	P488-05	DF-503	PTE485		4TM-S5	1st. Video Amp. Screen
C42	.05	400	HCT-1003	P488-05	DF-503	PTE485		4TM-S5	Video Coupling
C43	.05	400	HCT-1003	P488-05	DF-503	PTE485		4TM-S5	Video Coupling
C44	47			SI47NP0	TCZ-47		NP0L-470	5TCC-Q47	Fixed Trimmer
C45	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C46	.25	400	HDT-1015	P488-25		GT4P25		4TM-P25	Picture Tube Cathode
C47	300	2000	HCM-1616-C2K						Horiz. Feedback
C48	.05	400	HCT-1003	P488-05	DF-503	PTE485		4TM-S5	AGC Filter
C49	1	100	HCT-1027-1	485-1.0		GT4W1			AGC Filter
C50	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C51	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Plate
C52	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Screen
C53	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Fil.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	1500		HCC-1936	BPD-005	DD-152	1W5D15	801-0015	5HK-D15	2nd. Sound IF De..
C55	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Cathode
C56	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Fil.
C57	330		HCC-1937	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C58	330		HCC-1933	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C59	330		HCC-1937	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C60	1500		HCC-1936	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	De-emphasis
C61	.01	400	HCT-1022	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C62	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	RF Bypass
C63	5000	500	HCM-1602A	1468-005	D6-502	1D5D5	GP2-333-502	1FM-25	Audio Coupling
C64	.003	1000	HCT-1021	P1088-003		PTE16D3		MB-D3	Audio Output Plate
C65	330	500	HCM-1624C	1468-00025	D6-251	5W5T25	GP2K-251	1FM-325	Sync. Coupling
C66	.01	600	HCT-1008	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C67	500	500	HCM-1625A	1468-0005	D6-501	5W5T5	GP2K-501	1FM-35	Sync. Coupling
C68	5000	500	HCM-1602A	1468-005	D6-502	1D5D5	GP2-333-502	1FM-25	Vert. Integrator Net.
C69	5000	500	HCM-1602A	1468-005	D6-502	1D5D5	GP2-333-502	1FM-25	Vert. Integrator Net.
C70	5000	500	HCM-1602AK	1468-005	D6-502	1D5D5	GP2-333-502	1FM-25	Vert. Integrator Net.
C71	5000	500	HCM-1602AK	1468-005	D6-502	1D5D5	GP2-333-502	1FM-25	Vert. Osc. Grid Cap.
C72	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Osc. Grid Cap.
C73	.08	600	HCT-1029						Vert. Discharge
C74	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C75	250	500	HCK-1624C	1468-00025	D6-251	5W5T25	GP2K-251	1FM-325	Horiz. Sync. Coupling
C76	2000	500	HCM-1606A	1467-002	D6-202	1W5D2	GP2-333-202	1FM-22	Horiz. Sync. Coupling
C77	.05	400	HCT-1003	P488-05	DF-503	PTE4S5		4TM-S5	AFC Plate
C78	.02	600	HCT-1030	P688-02	DF-203	PTE6S2		6TM-S2	AFC Filter
C79	.25	400	HCT-1015	P488-25		GT4P25		4TM-P25	AFC Filter
C80	.10	500	HCM-1628A	1469-00001		5R5Q1		MB-41	Horiz. Feedback
C81	350	500	HCM-1624C	1469-00025		5R5T25			Horiz.Osc. Grid Cap.
C82	.01	600	HCT-1008	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C83	1000	500	HCM-1620A	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Discharge
C84	2000	500	HCM-1606A	1467-002	D6-202	1W5D2	GP2-333-202	1FM-22	Horiz. Sweep Coupling
C85	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C86	1	100	HCT-1027-1	485-1.0		GT4W1			Horiz. Output Cathode
C87	.05	400	HCT-1003	P488-05	DF-503	PTE4S5		4TM-S5	Fixed Trimmer
C88	150	2000	HCM-1619-C2K						Fixed Trimmer
C89	.03	600	HCT-1032	P688-03		PTE6S3		6TM-S3	Damper Filter
C90	.1	600	HCT-1002	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Sweep Coupling
C91	.00047	10000	HCH-2705	10084-0005		PTE100T5		TVM-351	HV Filter
C92	.00047	10000	HCH-2705	10084-0005		PTE100T5		TVM-351	HV Filter
C93	5000		HCC-1926	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C94	.05	400	HCT-1003	P488-05	DF-503	PTE4S5		4TM-S5	Bias Filter
C95	.05	400	HCT-1003	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C96	.05	400	HCT-1003	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	50KΩ	½	GRV-831	Concentrikit B11-123 † B11-139 † E-187 †	RTV-75		Horiz. Hold Control-Panel
B	2Meg	½					Vertical Hold Control-Rear
C	Shaft end						Attach per instructions in "Concentrikit"
R2A	20KΩ	4	GRV-834			RTV-300	Brightness Control Panel - Wire Wound
B	5000Ω	½					Contrast Control Rear
R3	500KΩ		GRV-830				Volume Control and Switch
R4A	2Meg	½	RGV-812-1	Q11-139	AG-83-S	AN-75	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5	2000Ω	2	GRV-824	WK-2000	43-2000	VK-131	Vertical Linearity Control - Wire Wound
R6A	1000Ω	4	GRV-836				Focus Control-Panel - Wire Wound
B	1000Ω	4					Focus Control-Rear - Wire Wound

† Additional parts to be used with "Concentrikit"

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	1000Ω	5% 1	GRC-245	BTS-1000	AGC Network
R8	47Ω	5% ½	GRC-211		RF Amp. Cathode
R9	47KΩ	½	GRC-207	BTS-47K	RF Amp. Screen
R10	12KΩ	5% 2		BTB-12K	RF Amp. Plate - See Note 1
R11	47KΩ	½	GRC-207	BTS-47K	Voltage Divider
R12	100KΩ	½	GRC-225	BTS-100K	Mixer Grid
R13	470Ω	½	GRC-213	BTS-470	Mixer Cathode
R14	18KΩ	1	GRC-208	BTA-18K	Decoupling
R15	12KΩ	½	GRC-272	BTS-12K	Osc. Grid
R16	18KΩ	5% 1		BTA-18K	Osc. Plate - See Note 2
R17	15KΩ	5% ½	GRC-223		1st. Video IF Amp. Grid
R18	47Ω	5% ½	GRC-211		1st. Video IF Amp. Cathode
R19	12KΩ	5% 2		BTB-12K	1st. Video IF Amp. Decoupling - See Note 1
R20	5.1Ω	½	GRC-292		Parasitic Suppressor - Wire Wound
R21	4700Ω	20% ½	GRC-273	BTS-4700	2nd. Video IF Amp. Grid
R22	47Ω	5% ½	GRC-211		2nd. Video IF Amp. Cathode
R23	12KΩ	5% 2		BTB-12K	Decoupling - See Note 1
R24	2200Ω	5% ½	GRC-219	BTS-2200	Decoupling
R25	100KΩ	½	GRC-225	BTS-100K	AGC Network
R26	15KΩ	5% ½	GRC-223		3rd. Video IF Amp. Grid
R27	100Ω	½	GRC-216	BTS-100	3rd. Video IF Amp. Cathode
R28	47KΩ	½	GRC-207	BTS-47K	3rd. Video IF Amp. Screen
R29	12KΩ	5% 2		BTB-12K	3rd. Video IF Amp. Plate - See Note 1
R30	1000Ω	5% ½	GRC-245	BTS-1000	3rd. Video IF Amp. Decoupling
R31	33KΩ	½	GRC-205	BTS-33K	Peaking Coil Shunt
R32	33KΩ	½	GRC-205	BTS-33K	AGC Network
R33	470KΩ	20% 1	GRC-228	BTA-470K	AGC Network
R34	820KΩ	½	GRC-246	BTS-820K	AGC Network
R35	4700Ω	20% ½	GRC-273	BTS-4700	1st. Video Amp. Grid
R36	47Ω	20% ½	GRC-211		1st. Video Amp. Cathode
R37	3900Ω	5% 1	GRC-249	BTA-3900	1st. Video Amp. Screen
R38	3900Ω	5% 1	GRC-249	BTA-3900	1st. Video Amp. Plate
R39	18KΩ	5% 1	GRC-261	BTA-18K	Peaking Coil Shunt
R40	22KΩ	1	GRC-300	BTA-22K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ANDREA PART No.	IRC PART No.	IDENTIFICATION CODES
R41	470KΩ	20% ½	GRC-228	BTS-470K	2nd. Video Amp. Grid
R42	10KΩ	1	GRC-304	BTA-10K	Peaking Coil Shunt
R43	3300Ω	½	GRC-254	BTA-3300	2nd. Video Amp. Plate
R44	6800Ω	20% ½	GRC-221	BTS-6800	Contrast Control Shunt
R45	33KΩ	5% ½	GRC-203	BTS-203	Isolation
R46	18KΩ	½	GRC-308	BTS-18K	Voltage Divider - See Note 6
R47	47KΩ	½	GRC-207	BTS-47K	AGC Network
R48	100KΩ	½	GRC-258	BTS-100K	AGC Network
R49	4700Ω	20% ½	GRC-205	BTS-4700	Isolation
R50	470KΩ	5% ½	GRC-228	BTS-470K	DC Restorer Diode Load
R51	47KΩ	½	GRC-207	BTS-47K	Voltage Divider
R52	1Meg	½	GRC-274	BTS-1Meg	Picture Tube Grid
R53	47KΩ	½	GRC-207	BTS-47K	Picture Tube Cathode
R54	4700Ω	½	GRC-273	BTS-4700	Voltage Divider
R55	100KΩ	½	GRC-225	BTS-100K	AVC Network
R56	82Ω	2	GRC-215	BTS-82	1st. Sound IF Amp. Cathode
R57	39KΩ	2	GRC-306	BTB-39K	1st. Sound IF Amp. Plate
R58	3300Ω	1	GRC-254	BTA-3300	1st. Sound IF Amp. Plate Decoupling
R59	150Ω	½	GRC-202	BTS-150	2nd. Sound IF Amp. Cathode
R60	15KΩ	2	GRC-237	BTB-15K	2nd. Sound IF Amp. Decoupling
R61	15KΩ	5% ½	GRC-223	BTS-15K	Ratio Detector Diode Load
R62	15KΩ	5% ½	GRC-223	BTS-15K	Ratio Detector Diode Load
R63	1000Ω	5% ½	GRC-245	BTS-1000	Balancing
R64	22Ω		GRC-307		Balancing
R65	33KΩ	½	GRC-203	BTS-33K	De-emphasis
R66	100KΩ	½	GRC-225	BTS-100K	AVC Network
R67	4.7Meg	½	GRC-242	BTS-4.7Meg	AF Amp. Grid
R68	330KΩ	½	GRC-301	BTS-330K	AF Amp. Plate
R69	68KΩ	5% ½	GRC-204	BTS-68K	AF Amp. Plate Decoupling
R70	680KΩ	½	GRC-302	BTS-680K	Output Grid
R71	680Ω	1	GRC-310	BTA-680	Output Cathode
R72	820KΩ	½	GRC-246	BTS-820K	Sync. Clipper Plate
R73	330KΩ	½	GRC-301	BTS-330K	Sync. Separator Grid
R74	6800Ω	2	GRC-257	BTB-6800	Sync. Separator Plate
R75	22KΩ	2	GRC-238	BTB-22K	Sync. Separator Plate Decoupling
R76	22KΩ	½	GRC-201	BTS-22K	Integrator Network
R77	15KΩ	5% ½	GRC-223	BTS-15K	Integrator Network
R78	6800Ω	½	GRC-221	BTS-6800	Integrator Network
R79	6800Ω	½	GRC-221	BTS-6800	Integrator Network
R80	560KΩ	½		BTS-560K	Vertical Osc. Grid - See Note 3
R81	470KΩ	½	GRC-228	BTS-470K	Vertical Hold Control Shunt
R82	560KΩ	1		BTA-560K	Vertical Osc. Plate - See Note 3
R83	6800Ω	½	GRC-221	BTS-6800	Vertical Peaking
R84	1Meg	½	GRC-274	BTS-1Meg	Vertical Output Grid
R85	1500Ω	½	GRC-259	BTS-1500	Vertical Output Cathode
R86	8000Ω	5	GRW-537	1 3/4A-8000	Decoupling - Wire Wound - See Note 4
R87	2.2Meg	5% ½	GRC-230	BTS-2.2Meg	Sync. Limiter Grid
R88	4700Ω	1	GRC-284	BTA-4700	Sync. Limiter Cathode
R89	6800Ω	20% ½	GRC-221	BTS-6800	Cathode Follower Cathode
R90	330KΩ	½	GRC-301	BTS-330K	Voltage Divider
R91	100KΩ	½	GRC-225	BTS-100K	AFC Plate
R92	22KΩ	½	GRC-201	BTS-22K	Voltage Divider
R93	820KΩ	½	GRC-246	BTS-820K	AFC Grid
R94	10KΩ	½	GRC-304	BTS-10K	AFC Filter
R95	150KΩ	½	GRC-243	BTS-150K	Voltage Divider
R96	100KΩ	½	GRC-225	BTS-100K	Horiz. Feedback Network
R97	3.3Meg	½	GRC-206	BTS-3.3Meg	Voltage Divider
R98	150KΩ	5% ½	GRC-243	BTS-150K	Horiz. Osc. Grid
R99	150KΩ	5% ½	GRC-243	BTS-150K	Voltage Divider
R100	8200Ω	½	GRC-285	BTS-8200	Horiz. Osc. Coil Shunt
R101	150KΩ	5% ½	GRC-243	BTS-150K	Horiz. Feedback Network
R102	15KΩ	5% ½	GRC-223	BTS-15K	Horiz. Osc. Decoupling
R103	100KΩ	5% 1	GRC-258	BTA-100K	Voltage Divider
R104	4700Ω	20% ½	GRC-205	BTS-4700	Horiz. Output Grid
R105	560KΩ	½		BTS-560K	Horiz. Output Grid - See Note 5
R106	100Ω	2	GRC-235		Horiz. Output Cathode
R107	8000Ω	5	GRW-537	1 3/4A-8000	Horiz. Output Screen - Wire Wound
R108	330Ω	5	GRW-539		Voltage Divider - Wire Wound
R109	3.9Ω	1	GRC-278		HV Filament
R110	6.8KΩ	½	GRC-221	BTS-6800	Decoupling
R111	10KΩ	2	GRC-267	BTB-10K	Decoupling
R112	500Ω	5	GRW-536	1 3/4A-500	Voltage Divider - Wire Wound
R113	500Ω	10	GRW-532	1 3/4A-500	Surge Limiter - Wire Wound
R114	500Ω	15	GRW-538	2D-500	Focus Coil Shunt - Wire Wound
R115	22Ω	2	GRC-312		Bias Filter

Note 1 Some models use 10KΩ 2 Watt resistor in this application.
Note 2 Some models use 22KΩ 1 Watt resistor in this application.
Note 3 Some models use 470KΩ 1Watt resistor in this application.
Note 4 Some models use 3000Ω 5Watt resistor in this application.
Note 5 Some models use 470KΩ resistor in this application.
Note 6 Some models use resistors in parallel to obtain desired value.

SPEAKER

ITEM No.	RATINGS: FIELD. RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: VIKING PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1A	PM	3.5Ω	SL4011	12J12	12A4A	② Used in table models
B	PM	3.5Ω	SL4014 ②	7J9	7A31	
	CONE DIA.	V. C. DIA.				
SP2A	11 3/8"	1"				
B	6 7/8"	9/16"				

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ② 1.95A	720VCT .250ADC	5VAC ② 3A	② 6.3VAC 1.2A SEC. 4 6.3VAC ② 8.5A	ST-3041			TP-355 ①

① New mounting holes.

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T2	190Ω	1KΩ	ST-3029	A-8122 ①	A-4000 ①	TBO-2	Vert. Block Osc. Trans.
T3	235Ω	31Ω	ST-3042	A-8130	HVO-7		Horiz. Output Trans.
	Tap 17Ω	Taps 8Ω and 28Ω					
		SEC. 2					
		0Ω					
T4	1.5KΩ		ST-3040		A-3039		Vert. Output Trans.
	Tap 4.2Ω						
T5A	19Ω		ST-3043	DY-9	MDF-70		Horiz. Deflection Coils
B	46Ω						Vert. Deflection Coils
T6	250Ω		ST-3044		MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	6.3KΩ	3.5Ω	390Ω	.4Ω		A-3878 ①	A-2931 ①	RQ-13	① Drill one new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250A	110Ω	4.5 Henries	HCE-1310	C-2326 ①	C-2991 ①	TR4200 ①	① Drill one new mounting hole.

COILS (RF-IF)

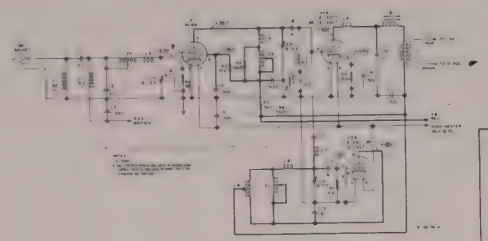
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ANDREA PART No.	IRC PART No.	
L2A	Ant. Matching	.6Ω	.6Ω	S-13		
B	Trans.	.6Ω	.6Ω			
L3	Sound IF Trap	0Ω		SA-337		
L4	Ant. Coil	0Ω				Part of Tuner Part # FM-5203
L5	Ant. End Inductor	0Ω				Part of Tuner Part # FM-5203
L6	RF Choke	8.2Ω		SA-341	CL-1	10 Microhenries
L7	Fil. Choke	2Ω		SA-330	CL-1	3.3 Microhenries
L8	RF End Inductor	0Ω				Part of Tuner Part # FM-5203
L9	RF Coil	0Ω				Part of Tuner Part # FM-5203
L10	Mixer Grid end Inductor	0Ω				Part of Tuner Part # FM-5203
L11	Mixer Grid Coil	0Ω				
L12	Osc. End Inductor	0Ω		SA-316		
L13	Osc. Shunt	0Ω		SA-318-1		
L14	Osc. Coil	0Ω				Part of Tuner Part # FM-5203
L15	1st. Video IF	.1Ω		SA-331		Includes Trap
L16	2nd. Video IF Sound Take-off Coil	.2Ω .2Ω	0Ω	SA-332		
L17	Fil. Choke	0Ω		SA-280		
L18	3rd. Video IF	.2Ω		SA-333		Includes Trap
L19	Fil. Choke	0Ω		SA-280		
L20	Cathode Trap	0Ω	0Ω	SA-287		
L21	4th. Video IF	.2Ω		SA-334		Includes Trap
L22	Peaking	7.5Ω		SA-284		Yellow Dot
L23	Peaking	6.6Ω		SA-285		Green Dot
L24	Peaking	7.5Ω		SA-284		Yellow Dot
L25	Peaking	7.5Ω		SA-284		Yellow Dot
L26	Peaking	7.5Ω		SA-284		Yellow Dot
L27	Peaking	6Ω		SA-286		Blue Dot
L28	4.5MC Trap	2.4Ω		SA-328		
L29	Sound IF	.2Ω	.2Ω	SA-329		
L30	Ratio Det. Trans.	.3Ω	.2Ω	SA-327		Tap .2Ω
L31	Fil. Choke	0Ω		SA-280		
L32	RF Choke	.1Ω		SA-278		
L33	Horiz. Osc.	80Ω	47Ω	SA-335		
L34	Width Coil	2.8Ω		SA-346		
L35	Horiz. Lin.	3Ω	Tap 1.2Ω	SA-340		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			ANDREA PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	.250			312.250	342001	

MISCELLANEOUS

ITEM No.	PART NAME	ANDREA PART No.	NOTES
M2	RF Tuner	FM-5203	
M3	Switch	FM-5224	TV-FM
M4	Switch	FM-5212	TV-Phono
M5	Switch	FM-5212	Metro-Fringe
M6	Switch	FM-5198	High-Low Band
M7	Ion Trap	FM-5250	
B4,B3	Trimmer	HCV-2120	Dual Horiz. Drive (200-530MMF), Horiz. Lock (15-170MMF)



R. F. TUNER SCHEMATIC DIAGRAM

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

NOTES:

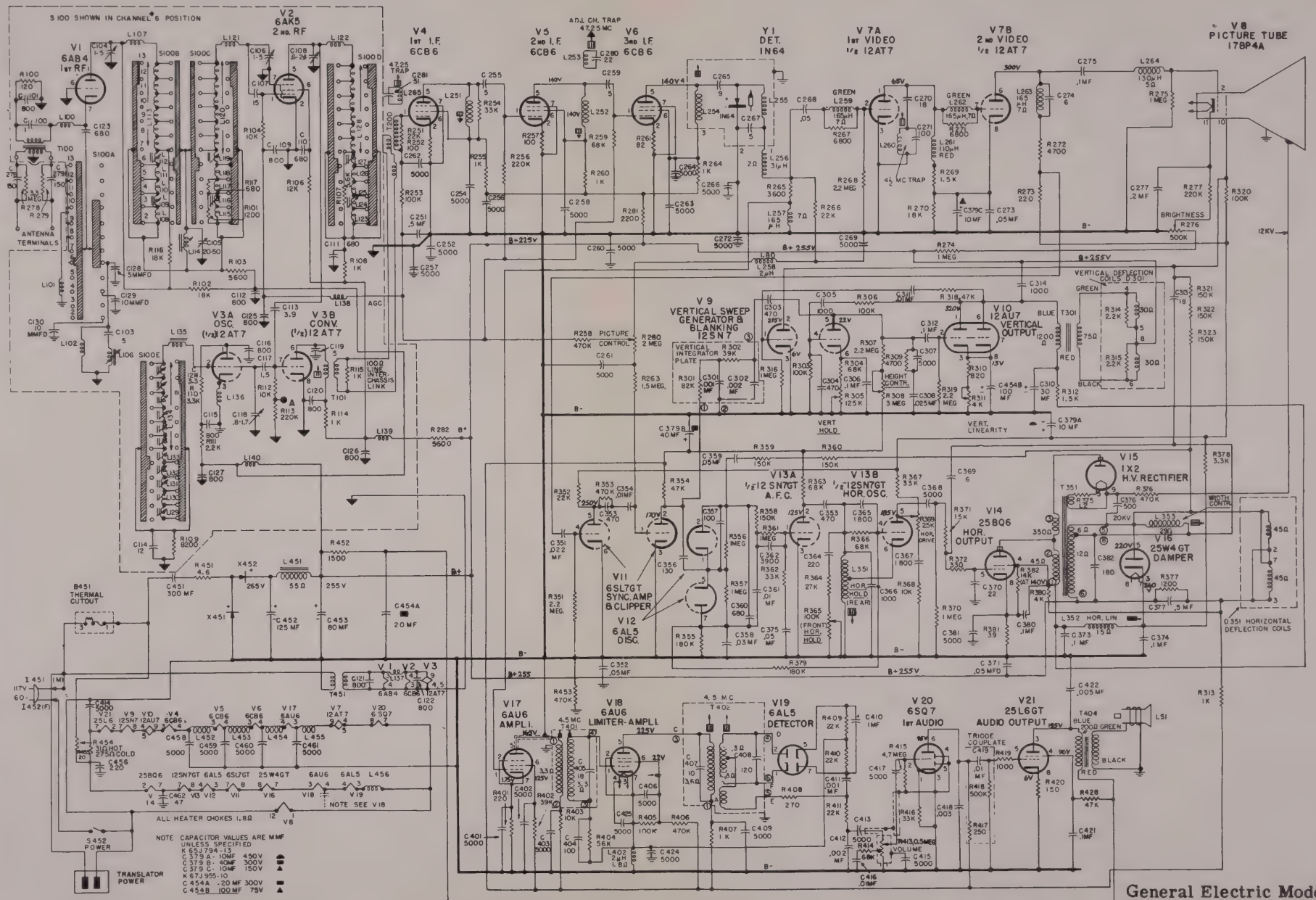
1. ALL VOLTAGES MEASURED WITH AN ELECTRONIC VOLTMETER CONNECTED FROM SOCKET LUG TO CHASSIS.
2. SUPPLY VOLTAGE 117V., 60 CYCLE, AC.
3. K - 1000
4. ALL CAPACITANCE VALUES IN MMF. AND ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE NOTED
5. SOME CR TUBES REQUIRE CONNECTION TO GREEN TAP TO OBTAIN FOCUS.

CROSLEY

MODELS: DU-20CDM, DU-20CHB, DU-20CHM, DU-20COB, DU-20COM

(Chassis 357)

The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.



General Electric Models 17C113, 17C115, 17C120.

PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

SET 152 FOLDER 2 A

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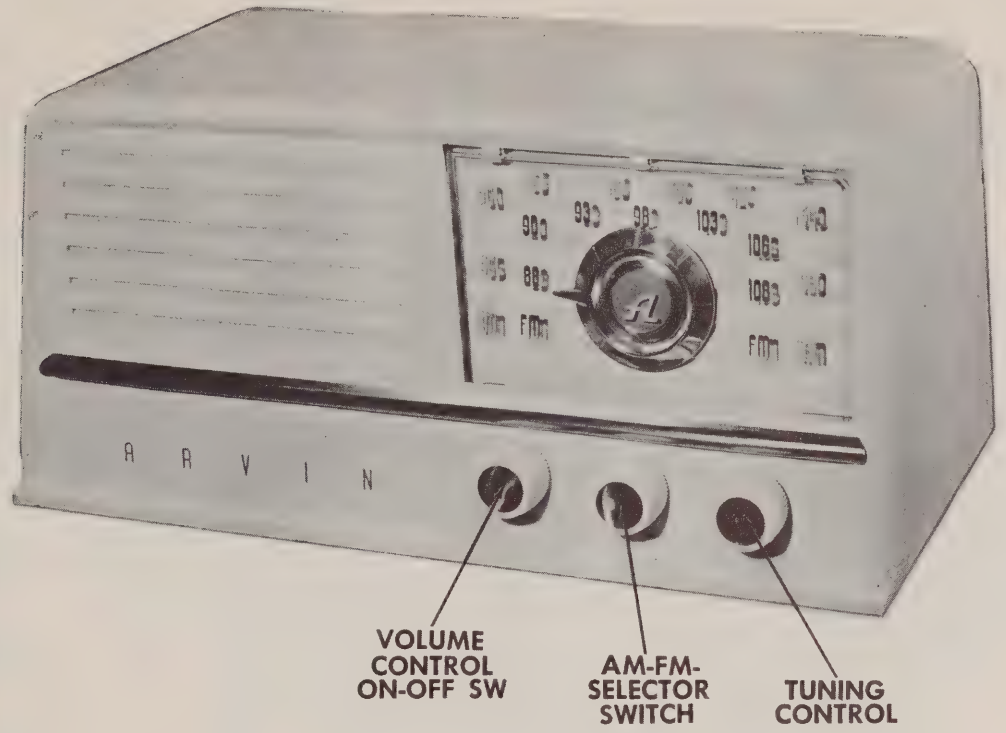
ARVIN
MODEL 580TFM (Ch. RE-313)

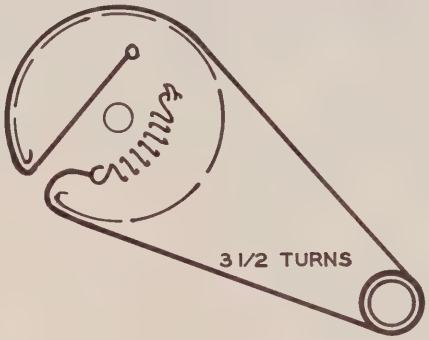
ARVIN
MODEL 580TFM (Ch. RE-313)



ARVIN
MODEL 580TFM (Ch. RE-313)

TRADE NAME	Arvin, Model 580TFM (Ch. RE-313)
MANUFACTURER	Arvin Industries Inc., Columbus, Indiana
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (EIGHT)	Types 6BA6 FM RF Amp., 12AT7 FM Converter, 6BE6 AM Converter 6BA6 1st. FM IF Amp., 6BA6 2nd. FM IF Amp., 6T8 DET.-AVC-AF, 6V6GT Power Output 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .35 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC — FREQ. MOD. 88-108MC

TUNING GANG FULLY CLOSED



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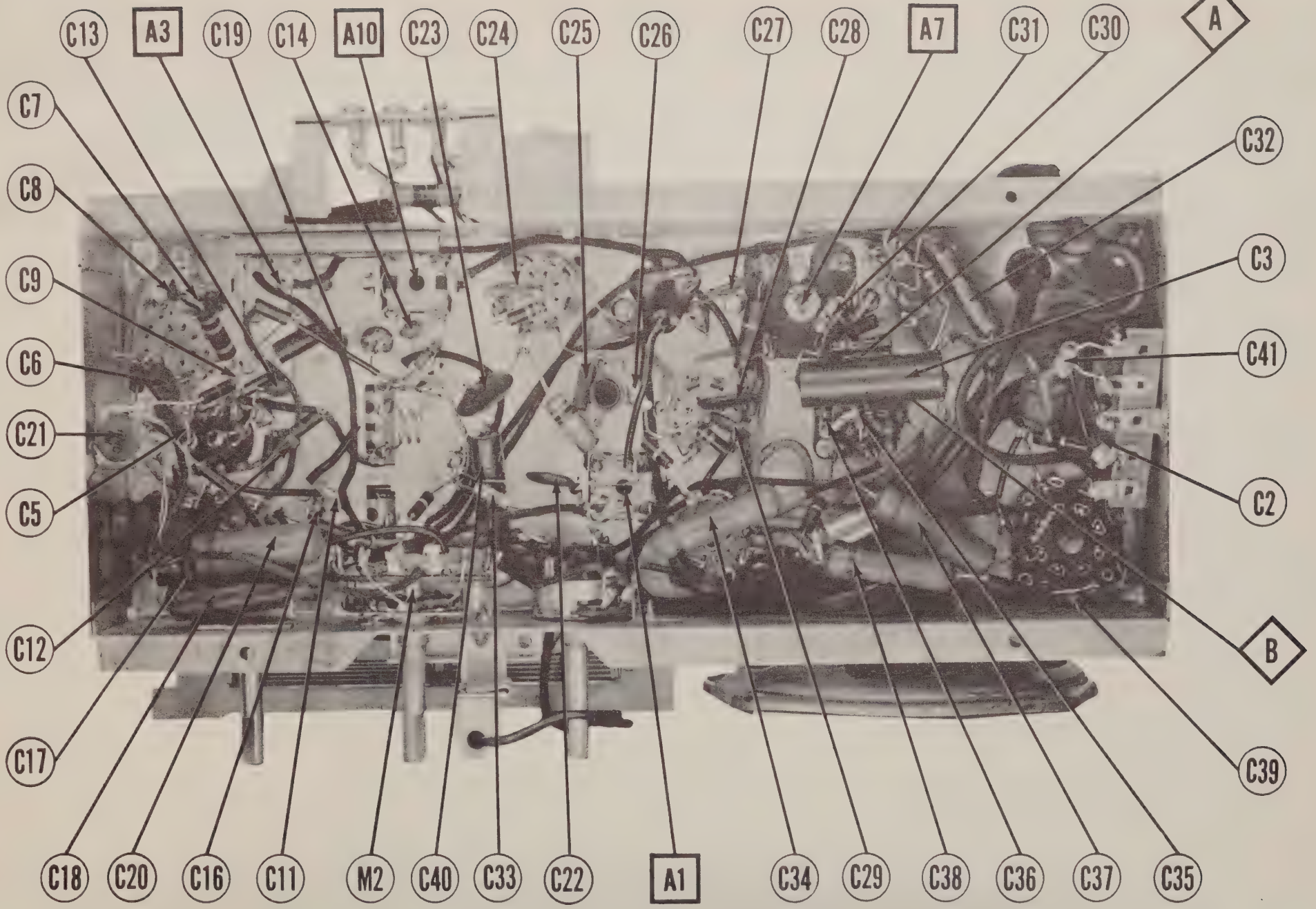
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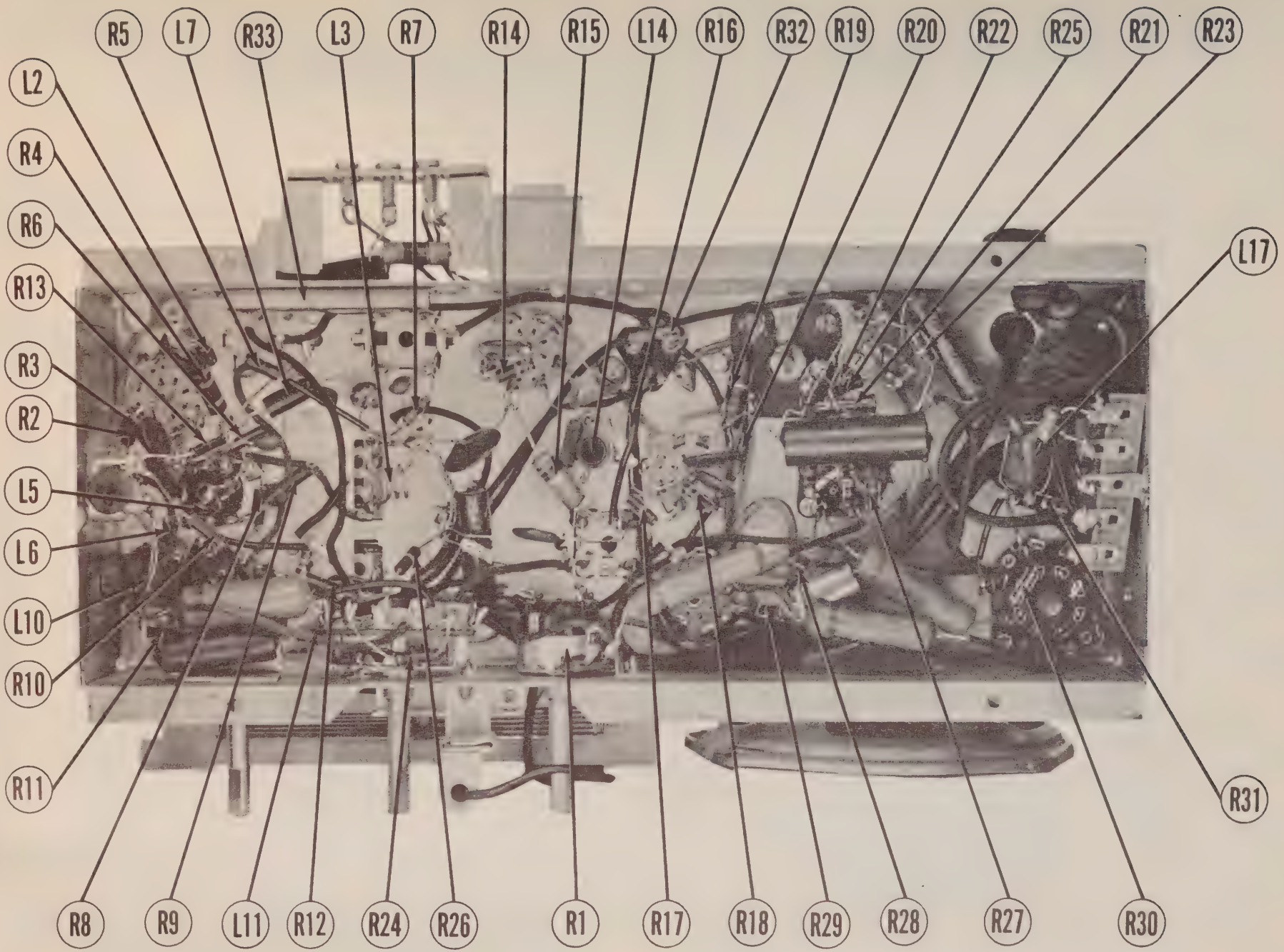
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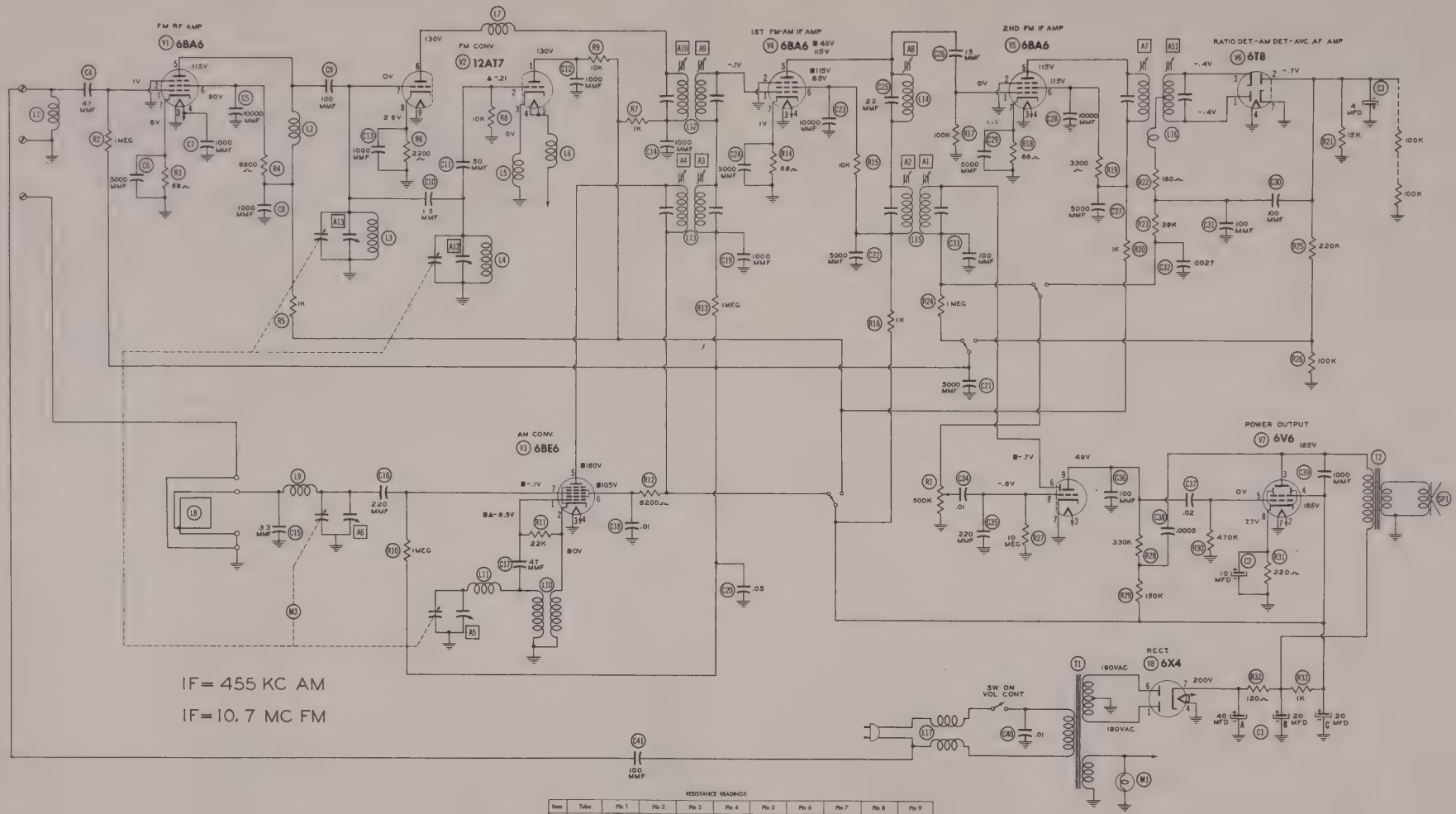

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	2.5MEG ai.1Meg	0Ω	0Ω	.1Ω	■†2.1KΩ	■†8.9KΩ	68Ω		
V 2	12AT7	■†11KΩ	10KΩ	.4Ω	.7Ω	.7Ω	■†3.1KΩ	0Ω	2.3KΩ	0Ω
V 3	6BE6	22KΩ	.6Ω	0Ω	.1Ω	†1.1KΩ	†9.3KΩ	2.5Meg ■1.1Meg		
V 4	6BA6	2.5Meg ■1.1Meg	0Ω	0Ω	.1Ω	†2.1KΩ	†12KΩ	68Ω		
V 5	6BA6	100KΩ	0Ω	0Ω	.1Ω	■†2.1KΩ	■†5.4KΩ	68Ω		
V 6	6T8	Inf. ■640KΩ	13KΩ	Inf. ■540KΩ	0Ω	.1Ω	450KΩ min.	0Ω	10Meg	†480KΩ
V 7	6V6GT	Inf.	.1Ω	†390Ω	31.1KΩ	470KΩ	Inf.	0Ω	270Ω	
V 8	6X4	170Ω	0Ω ■†1KΩ	0Ω	.1Ω	†1.1KΩ	360Ω	90KΩ		

ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
■ MEASURED IN AM POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V8

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer parallel with base of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD.	High side to pin 7, (Grid) of 6BE6, (V3). Low side to chassis.	455KC (400∿ Mod.)	AM (CCW)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1650KC	"	"	"	A5	"
3.		Loop	1400KC	"	Tune for max. output.	"	A6	"
4.		Loop	600KC	"	600KC	"		Adjust rotor end plates on ant. section of tuning gang for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point A to chassis. The junction of these two resistors is alignment Point C as shown on the shcematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.005MFD	High side to pin 1, (Grid), of 6BA6, (V4) Low side to chassis.	10.7MC (10MC SWP)	FM (CW)	Tuning gang fully closed.	DC probe to Point Ⓐ. Common to chassis.	A7, A8	Adjust for maximum deflection.
6.	"	High side to pin 7, (Grid), of 12AT7, (V2) Low side to chassis.	"	"	"	"	A9, A10	"
7.	"	"	"	"	"	DC probe to Point Ⓑ. Common to Point Ⓒ.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
5.	.005MFD	High side to pin 1, (Grid) of 6BA6, (V4). Low side to chassis.	10.7MC (450KC SWP)	FM (CW)	Point of non-interference.	Vert. Amp. to Point Ⓐ. Common to chassis.	A7, A8	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per figure 1.
6.	"	High side to pin 7, (Grid) of 12AT7, (V2) Low side to chassis.	"	"	"	"	A9, A10	"
7.	"	"	"	"	"	Vert. Amp. to Point Ⓑ. Low side to chassis.	A11	Reconnect capacitor C3. Adjust A11 so 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	300Ω carbon resistor	High side thru 300Ω to "FM" ant. terminal. Low side to chassis.	108.5MC (unmod.)	FM	Tuning gang fully open.	DC probe to Point Ⓐ. Common to chassis.	A12	Adjust for maximum deflection.
9.	"	"	87.5MC	"	Tuning gang fully closed.	"	L6	Check coil with a tuning wand. If necessary expand or compress coil turns for maximum deflection. If coil is changed repeat steps 8 and 9.
10.	"	"	105MC	"	Tune for max. deflection.	"	A13	Adjust for maximum deflection.
11.	"	"	"	"	"	"	L3	Check coil with a tuning wand. If necessary expand or compress coil turns for maximum deflection. If coils is changed repeat steps 10 and 11.

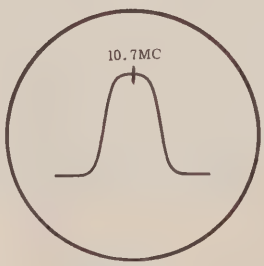


FIG. 1

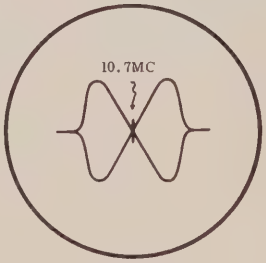


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6BA6	6BA6	7BK	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	6BE6	6BE6	7CH	
V4	1st. FM-AM IF Amp	6BA6	6BA6	7BK	
V5	2nd. FM IF Amp.	6BA6	6BA6	7BK	
V6	Ratio Detector-AM Det.-AVC-AF	6T8	6T8	9E	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	250	A22806	AFH3-20		UP42225		TVL-3540	■ Filter
B	20	250							▲ Filter
C	20	250							Decoupling
C2	10	25	A22602	PRS25/10		BR102A		TVA-1204	Output Cathode
C3	4	25	A22659	PRS150/4		BR550		TVA-1203	Stabilizing
C4	47		C20203-470	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	FM RF Coupoupling
C5	10000		A22295	BPD-01	DD-103	1D3S1	821-01	5HK-S1	FM RF Amp. Screen
C6	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM RF Amp. Cathode
C7	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM RF Amp. Fil.
C8	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	RF Bypass
C9	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM RF Coupling
C10	1.5		A20238-3	SI1.5NP0	TCZ-1.5		NP0K-1R5		FM RF Coupling
C11	50		C20205-5		TCN-51		N750L-510		FM Osc. Grid Cap.
C12	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM Osc. Plate Dec.
C13	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM Mixer Cathode
C14	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	FM Mixer Plate Dec.
C15	3.3		C20205-20				N220K-3R3		Fixed Trimmer
C16	220		C20203-221	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AM RF Coupling †
C17	47		C20203-470		TCZ-47		NP0L-470	5TCC-Q47	AM Osc. Grid Cap.
C18	.01	400	C20068-103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AM Osc. Anode
C19	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	AVC Filter
C20	.05	200	C20067-503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C21	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C22	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Plate
C23	10000		A22295	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st. IF Amp. Screen
C24	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Cathode
C25	22	500		1469-000025	TCZ-22	5R5Q25	NP0K-220	MS-425	Fixed Trimmer
C26	15		C20203-150	SI15	D6-150		GP1K-150	5GA-Q15	FM IF Coupling
C27	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. FM IF Amp. Plate
C28	10000		A22295	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd. FM IF Amp. Screen
C29	5000		A21674	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. FM IF Amp. Cathode
C30	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode Load Cap.
C31	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode Load Cap.
C32	.003	600	C20069-302	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	De-emphasis
C33	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode RF Filter
C34	.01	400	C20068-103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C35	220		C20203-221	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Grid
C36	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	AF Amp. Plate
C37	.02	400	C20068-203	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C38	.0005	1000	C20069-501					MB-T5	Tone Comp.
C39	1000		A23078	BPD-001	DD-102	1W5D1	801-001	5HK-D1	Power Output Plate
C40	.01	400	C20249-103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C41	100		C20203-101	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM Ant. Line Isolation

† Some models use 100MMF in this application. (Part # C20203-101)

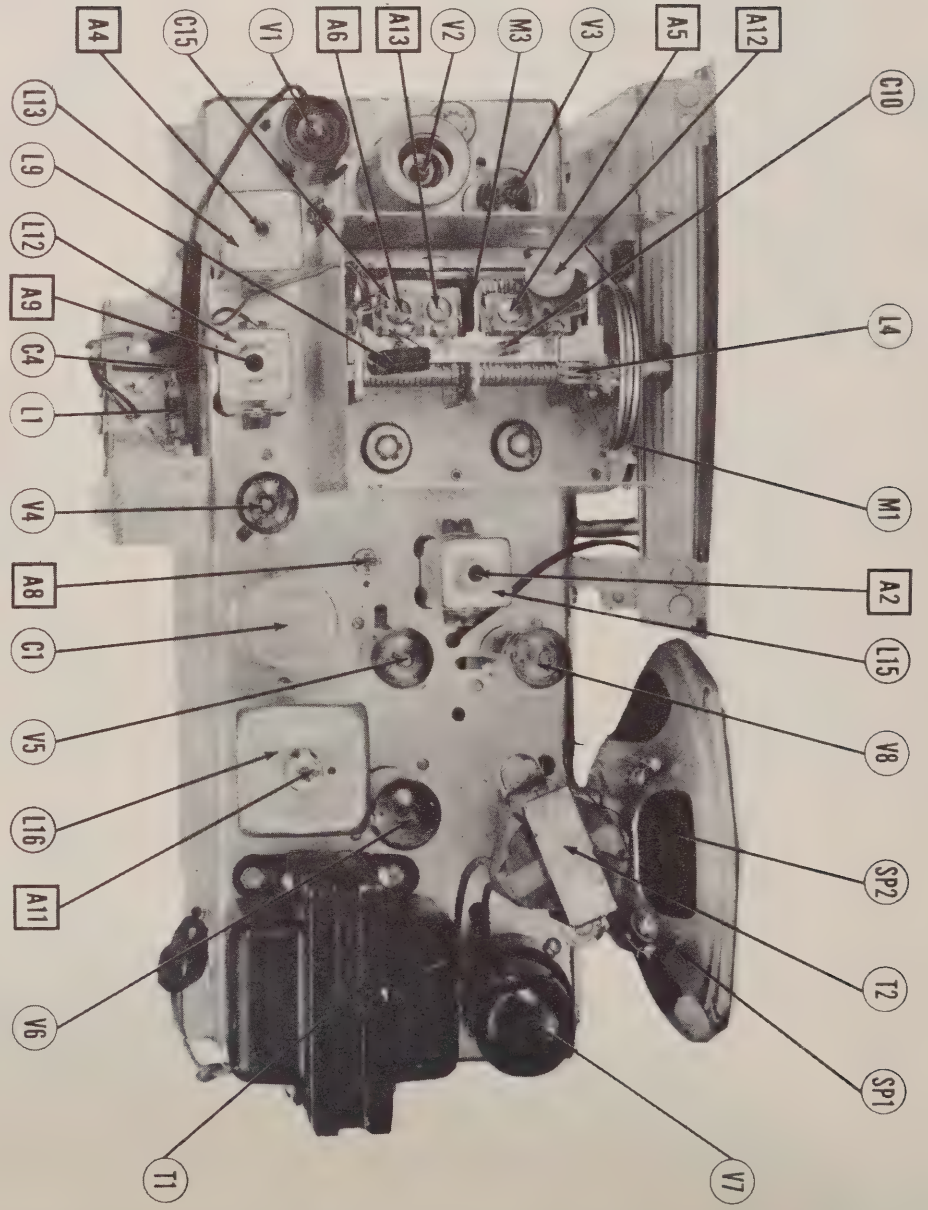
CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	C22963	Q13-133	AG-60-Z	B-60-S	Volume Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A per instructions

SET 152

FOLDER 2

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	
R2	1Meg	1/2	C20060-105	BTS-1Meg	FM RF Amp. Grid
R3	68Ω	1/2	C20060-680		FM RF Amp. Cathode
R4	6800Ω	1	C20070-682	BTA-6800	FM RF Amp. Screen
R5	1000Ω	1/2	C20060-102	BTS-1000	FM RF Amp. Decoupling
R6	2200Ω	1/2	C20060-222	BTS-2200	FM Converter Cathode
R7	1000Ω	1/2	C20060-102	BTS-1000	FM Converter Decoupling
R8	10KΩ	1/2	C20060-103	BTS-10K	FM Osc. Grid
R9	10KΩ	1/2	C20060-103	BTS-10K	FM Osc. Plate
R10	1Meg	1/2	C20060-105	BTS-1Meg	AM Converter Grid
R11	22KΩ	1/2	C20060-223	BTS-22K	AM Osc. Grid
R12	8200Ω	1	C20070-822	BTA-8200	AM Osc. Anode
R13	1Meg	1/2	C20060-105	BTS-1Meg	AVC Network
R14	68Ω	1/2	C20060-680		1st. FM-AM IF Amp. Cathode
R15	10KΩ	1	C20070-103	BTA-10K	1st. FM-AM IF Amp. Screen
R16	1000Ω	1/2	C20060-102	BTS-1000	1st. FM-AM IF Amp. Decoupling
R17	100KΩ	1/2	C20060-104	BTS-100K	2nd. FM IF Amp. Grid
R18	68Ω	1/2	C20060-680		2nd. FM IF Amp. Cathode
R19	3300Ω	1	C20070-332	BTA-3300	2nd. FM IF Amp. Screen
R20	1000Ω	1/2	C20060-102	BTS-1000	2nd. FM IF Amp. Decoupling
R21	15KΩ	1/2	C22381-153	BTS-15K	Ratio Detector Diode Load
R22	180Ω	1/2	C20061-181	BTS-180	Balancing
R23	39KΩ	1/2	C20120-393	BTS-39K	De-emphasis
R24	1Meg	1/2	C20060-105	BTS-1Meg	AVC Network
R25	220KΩ	1/2	C20060-224	BTS-220K	AVC Network
R26	100KΩ	1/2	C20060-104	BTS-100K	AVC Network
R27	10Meg	1/2	C20060-106	BTS-10Meg	AF Amp. Grid
R28	330KΩ	1/2	C20060-334	BTS-330K	AF Amp. Plate
R29	150KΩ	1/2	C20060-154	BTS-150K	AF Amp. Plate
R30	470KΩ	1/2	C20060-474	BTS-470K	Output Grid
R31	270Ω	1	C20070-271	BTA-270	Output Cathode
R32	120Ω	1	A23933	BW-1-120	Filter - Wire Wound
R33	1000Ω	10	A24774	1 3/4A-1000	Filter - Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .37A	380VCT .055ADC	6.3VAC @ 3.7A		D22959		P-2951 ①	

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5.7KΩ	3.5Ω	270Ω	.35Ω	AC22995	A-3877 ①	A-3026 ①	RO-9 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.5Ω	C-22760	ST105 Model P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4½"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

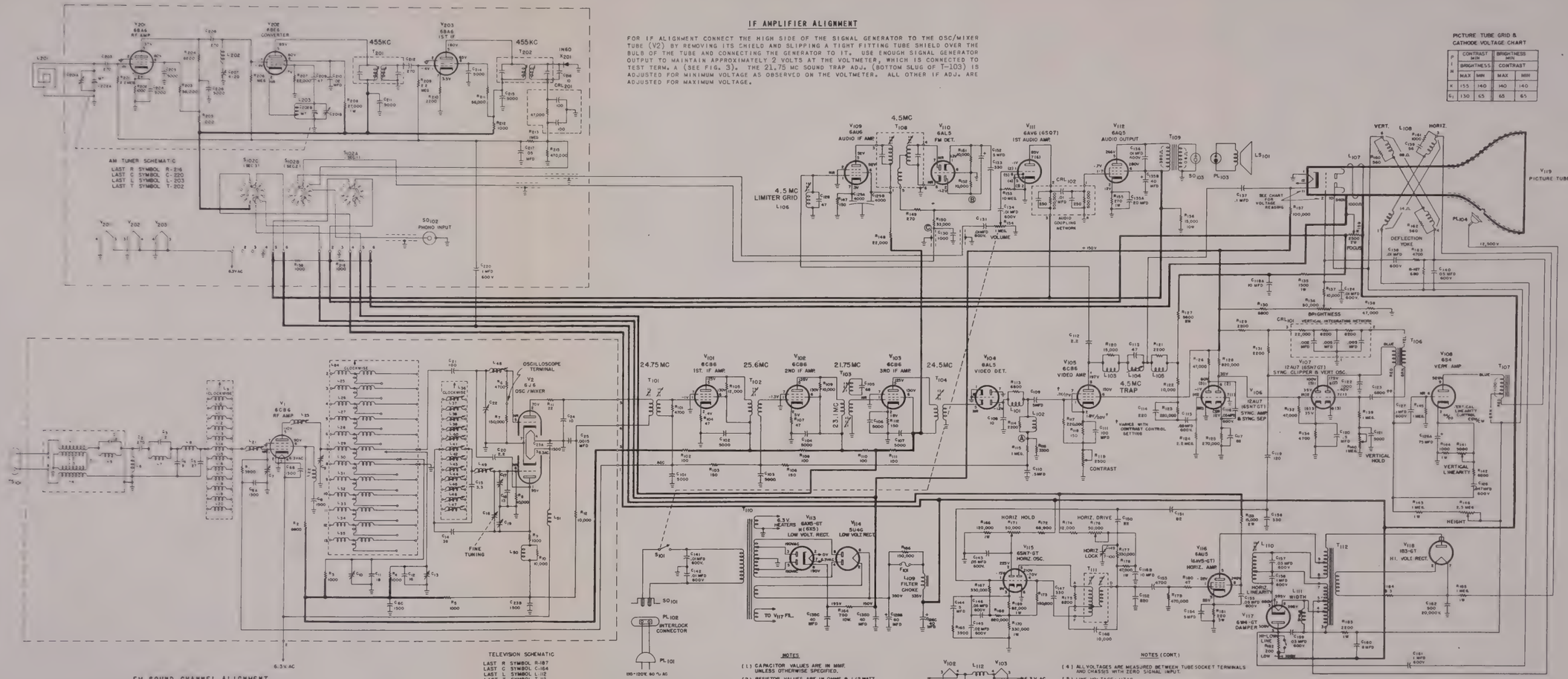
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ARVIN PART No.		
L1	FM Ant. Coil	.1Ω		AA22648-1		
L2	RF Choke	.6Ω		AA21445-1		
L3	FM RF Coil	0Ω		A22593		
L4	FM Osc. Coil	0Ω		A22594		
L5	Cathode Choke	.4Ω		AA22597-1		
L6	Fil. Choke	.7Ω		A21673		Iron Core (14 Microhenries)
L7	Parasitic Suppressor	0Ω		AA22345-1		
L8	AM Loop Ant.	.2Ω	1.8Ω	D24770		
L9	RF Choke	.6Ω		AA24772-1		
L10	AM Osc. Coil	.6Ω	7.3Ω	AC22587-1		
L11	Parasitic Suppressor	0Ω		AA22334-1		
L12	1st. FM IF	1.3Ω	1.3Ω	C22590		
L13	1st. AM IF	9Ω	9Ω	C24771		
L14	2nd. FM IF	.6Ω		AC22967-1		
L15	2nd. AM IF	13Ω	12Ω	C22352		
L16	Ratio Det. Trans.	.9Ω	.1Ω	AD22592-1		Tap .3Ω
L17A	Line Choke	0Ω		C24308-1		
B	Line Choke	0Ω		C24308-1		

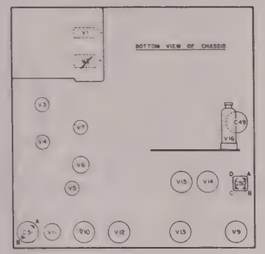
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ARVIN PART No.		
M1	Bayonet	6-8	.15	Brown			Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M2	Switch	C22961	AM-FM
M3	2 Gang Var. Cap.	D24773	
	Cabinet	A23829-2	Ivory
	Cabinet	A23829-3	Willow Green
	Cabinet	A23829-4	Sandal Wood
	Knob	A24464-2	
	Dial Pointer	D23242	


IF AMPLIFIER ALIGNMENT
FOR IF ALIGNMENT CONNECT THE HIGH SIDE OF THE SIGNAL GENERATOR TO THE OSC/MIXER TUBE (V2) BY REMOVING ITS SHIELD AND SLIPPING A TIGHT FITTING TUBE SHIELD OVER THE BULB OF THE TUBE AND CONNECTING THE GENERATOR TO IT. USE ENOUGH SIGNAL GENERATOR OUTPUT TO MAINTAIN APPROXIMATELY 2 VOLTS AT THE VOLTMETER, WHICH IS CONNECTED TO TEST TERM. A (SEE FIG. 3). THE 21.75 MC SOUND TRAP ADJ. (BOTTOM SLUG OF T-103) IS ADJUSTED FOR MINIMUM VOLTAGE AS OBSERVED ON THE VOLTMETER. ALL OTHER IF ADJ. ARE ADJUSTED FOR MAXIMUM VOLTAGE.
PICTURE TUBE GRID & CATHODE VOLTAGE CHART
CONTRAST MIN
BRIGHTNESS MIN
BRIGHTNESS
CONTRAST
MAX MIN MAX MIN
AM TUNER SCHEMATIC
LAST R SYMBOL R-216
LAST C SYMBOL C-220
LAST L SYMBOL L-203
LAST T SYMBOL T-202
FM SOUND CHANNEL ALIGNMENT
FOR FM SOUND ALIGNMENT THE SIGNAL GENERATOR IS CONNECTED TO TEST TERM. A (SEE FIG.3) THROUGH A .005 MFD. CAPACITOR WITH ENOUGH SIGNAL OUTPUT TO MAINTAIN APPROX. 1 VOLT AT THE VACUUM TUBE VOLTMETER. CONNECT THE CIRCUIT AS SHOWN BELOW. ADJUST THE 4.5 MC TRAP ADJ. (SEE FIG. 3) FOR MINIMUM VOLTAGE AS INDICATED ON THE VOLTMETER.
DISCONNECT THE TEST CIRCUIT AND CONNECT THE VTVM TO PIN NO. 2 OF THE FM DETECTOR TUBE V-110 (POINT B). ALIGN THE LIMITER GRID ADJ. (L-106) AND THE PRIMARY (BOTTOM) OF T-108 FOR MAXIMUM INDICATION ON THE VTVM. CONNECT THE VTVM ACROSS C-130 (POINT C) AND ADJUST THE SECONDARY (TOP) OF T-108 FOR THE NULL.
TELEVISION SCHEMATIC
LAST R SYMBOL R-187
LAST C SYMBOL C-164
LAST L SYMBOL L-112
LAST T SYMBOL T-112
NOTES
(1) CAPACITOR VALUES ARE IN MMF. UNLESS OTHERWISE SPECIFIED.
(2) RESISTOR VALUES ARE IN OHMS @ 1/2 WATT RATING UNLESS OTHERWISE SPECIFIED.
(3) PHONO-AM-TV-SWITCH SHOWN IN EXTREME CCW OR TV POSITION.
R SOME SETS MAY USE 6X5 RECTIFIER TUBE.
†† SOME SETS MAY USE 4700 MMF MICA
NOTES (CONT.)
(4) ALL VOLTAGES ARE MEASURED BETWEEN TUBE SOCKET TERMINALS AND CHASSIS WITH ZERO SIGNAL INPUT.
(5) LINE VOLTAGE - 117 AC.
(6) ALL VOLTAGES ARE DC AND POSITIVE UNLESS OTHERWISE SPECIFIED.
(7) DC VOLTAGES ARE MEASURED WITH A VTVM
(8) "NR"-NOT READABLE, VOLTAGES MEASURED AT THESE TERMINALS GENERALLY MEANINGLESS.
(9) OPERATING AND NON-OPERATING CONTROLS SET FOR NORMAL PICTURE OPERATION UNLESS OTHERWISE SPECIFIED
The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.
HALLICRAFTERS MODELS
17811-H, 17816, 17860-H, 17861-H.



NOTES

VOLTAGE MEASUREMENTS:

1. MADE WITH A VTVM FROM POINT INDICATED TO CHASSIS.
2. LINE VOLTAGE ...117 VOLTS.
3. ANTENNA DISCONNECTED.
4. STATION SELECTOR SWITCH ON CHANNEL WHICH DEVELOPS LESS THAN 1 VOLT NOISE AT PIN NO 3 OF TEST SOCKET.
5. CONTRAST CONTROL MAXIMUM CLOCKWISE POSITION.
6. ALL OTHER CONTROLS IN NORMAL OPERATING POSITION.

† = VARIES WITH SETTINGS OF CONTROLS.

CAUTION: DO NOT ATTEMPT VOLTAGE READINGS ON THE 6BJ6T OR 5CP1 READINGS ON THE 6BQ6GT PLATE WITH ORDINARY EQUIPMENT.

WAVEFORMS

1. OBSERVED ON DUMONT MODEL 241 OSCILLOSCOPE.
2. CONTRAST CONTROL SET FOR SIGNAL OF 45 V P TO P AT PLATE OF VIDEO AMP TUBE.
3. ALL OTHER CONTROLS IN NORMAL OPERATING POSITION.
4. 6BQ6GT HV RECTIFIER REMOVED TO ELIMINATE HV PULSE INTERFERENCE FROM SCOPE WHEN OBSERVING ALL WAVEFORMS EXCEPT THOSE FROM PHASE DET THROUGH HORIZ CIRCUIT. THE 6BQ6GT HV RECTIFIER MAY BE REPLACED WITH A 1B3GT/8016 IF IT IS COMPLETELY SHIELDED THROUGHOUT ITS LENGTH. TUBE WITH ALL PINS EXCEPT 5 & 7 CLIPPED, MAY BE SUBSTITUTED.

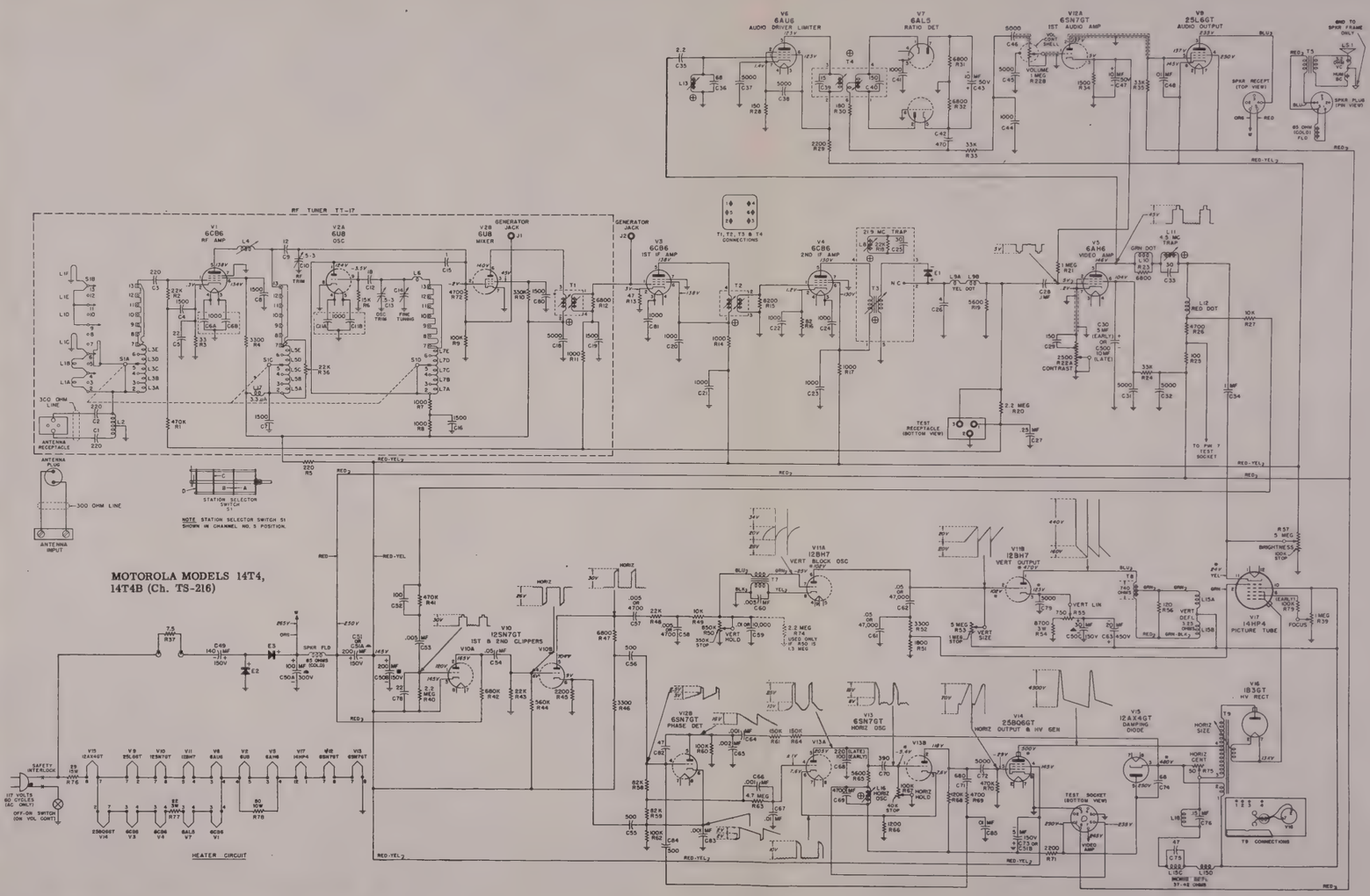
GENERAL:

RESISTORS INDICATED IN OHMS, K = 1000 OHMS.

CAPACITORS INDICATED IN MICROMICROFARADS UNLESS OTHERWISE SPECIFIED. WHEN INDICATED IN MICRO-MICROFARADS, VALUES ARE NOMINAL. TOLERANCES FOR MICA TYPES, EXCEPT FOR VALUES SHOWN IN ATSM CODE, SUCH AS 47,000, WHICH ARE THE PLASTIC MOLDED TYPE AND PREFERRED WHERE INDICATED.

⊕ = IRON TUNING CORES.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE


RF TUNER TT-17
V1 6CB6 RF AMP
V2A 6U8 OSC
V2B 6U8 MIXER
V3 6CB6 1ST IF AMP
V4 6CB6 2ND IF AMP
V5 6AH6 VIDEO AMP
V6 6AU6 AUDIO DRIVER LIMITER
V7 6AL5 RATIO DET
V12A 6SN7GT 1ST AUDIO AMP
V9 25L6GT AUDIO OUTPUT
V10 12SN7GT 1ST & 2ND CLIPPERS
V11A 12BH7 VERT BLOCK OSC
V11B 12BH7 VERT OUTPUT
V12B 6SN7GT PHASE DET
V13 6SN7GT HORIZ OSC
V14 2580GT HORIZ OUTPUT & HV GEN
V15 12AX4GT DAMPING DIODE
V16 1B3GT HV RECT
V17 14HP4 PICTURE TUBE
GENERATOR JACK J2
ANTENNA RECEPTACLE
ANTENNA PLUG
300 OHM LINE
ANTENNA INPUT
STATION SELECTOR SWITCH S1
NOTE STATION SELECTOR SWITCH S1 SHOWN IN CHANNEL NO. 5 POSITION.
T1, T2, T3 & T4 CONNECTIONS
TEST RECEPTACLE (BOTTOM VIEW)
TEST SOCKET (BOTTOM VIEW)
SPKR RECEPT (TOP VIEW)
SPKR PLUG (PIN VIEW)
T9 CONNECTIONS
HEATER CIRCUIT
117 VOLTS 60 CYCLES (AC ONLY)
OFF-ON SWITCH (ON VOL CONT)
MOTOROLA MODELS 14T4, 14T4B (Ch. TS-216)

PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

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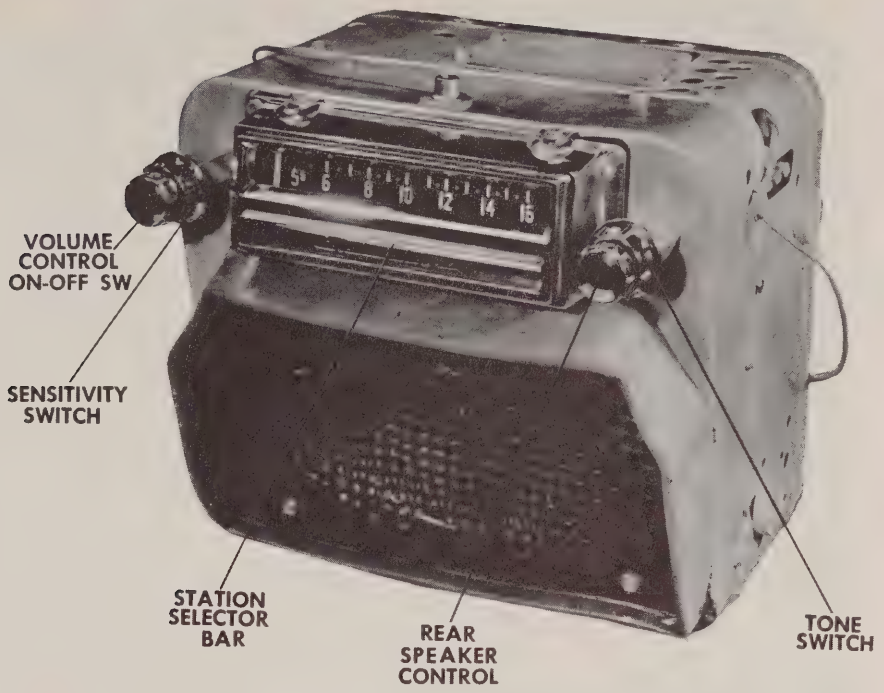
CADILLAC
MODELS 7260405, 7260905

CADILLAC
MODELS 7260405, 7260905



CADILLAC
MODELS 7260405, 7260905

CADILLAC MODEL 7260405

TRADE NAME	Cadillac, Models 7260405, 7260905
MANUFACTURER	Cadillac Motor Car, Div. of General Motors, Detroit, Michigan
TYPE SET	Battery Operated Custom-Built, 1951 Cadillac, Supreheterodyne Receiver
TUBES (NINE)	Types 6BA6 RF Amp., 6SA7 Converter, 6BA6 IF Amp., 6AQ7 DET.-AF, 6AV6 Phase Inv.,-AVC, (2) 6V6GT Power Output, 12AU7 Trigger Amp., 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6.6 Amp. at 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The use of a VTVM is required to align this radio. Attenuate signal generator to maintain less than 2 volt reading on the VTVM. Notice that the primary of the second IF transformer is aligned first.
To tune to the high frequency end, put a .070 feeler gauge, (or bare No. 13 copper wire), in the slot against the high frequency. Depress the selector bar and allow the tuner to run against the feeler gauge. Turn the radio off and back on.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1MFD.	High side to pin 8, (Grid), of 6SA7, (V2) Low side to chassis.	260KC	High freq. end (See Instructions above).	DC probe to Point A . Common to chassis.	A1, A2, A3, A4	Adjust in the order given for maximum deflection.
2.	68MMF.	High side thru dummy to ant. receptacle Low side to chassis.	1615KC	High freq. end. Check the setting of the oscillator coil, (L5), core to see that the core is 1 25/32in. from the mounting end of the coil form. Insert a plug in the coil to measure.	"	A5, A6, A7	"
3.	"	"	600KC	Tune for max. deflection.	"	A8, A9	"
4.	"	"	1615KC	"	"	A6, A7	"
5.	"	"	1000KC	"	"		Adjust pointer adjust screw to place pointer at 1000 on dial.

After set is installed fully extend antenna and tune in a weak station between 600 and 1000KC. Readjust A7 for maximum output.

FOR COMPLETE INFORMATION ON SEARCH TUNER SEE PHOTOFACT SET 145 FOLDER 8.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		CADILLAC PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	1217690	6BA6	7BK	
V2	Converter	7237752	6SA7	8R	
V3	IF Amplifier	1217690	6BA6	7BK	
V4	Detector-AF Amp.	1219484	6AQ7	8CK	
V5	Phase Inverter-AVC	1218506	6AV6	7BT	
V6	Power Output	1213793	6V6GT	7AC	
V7	Power Output	1213793	6V6GT	7AC	
V8	Trigger Amp.	1219485	12AU7	9A	
V9	Rectifier	1211924	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

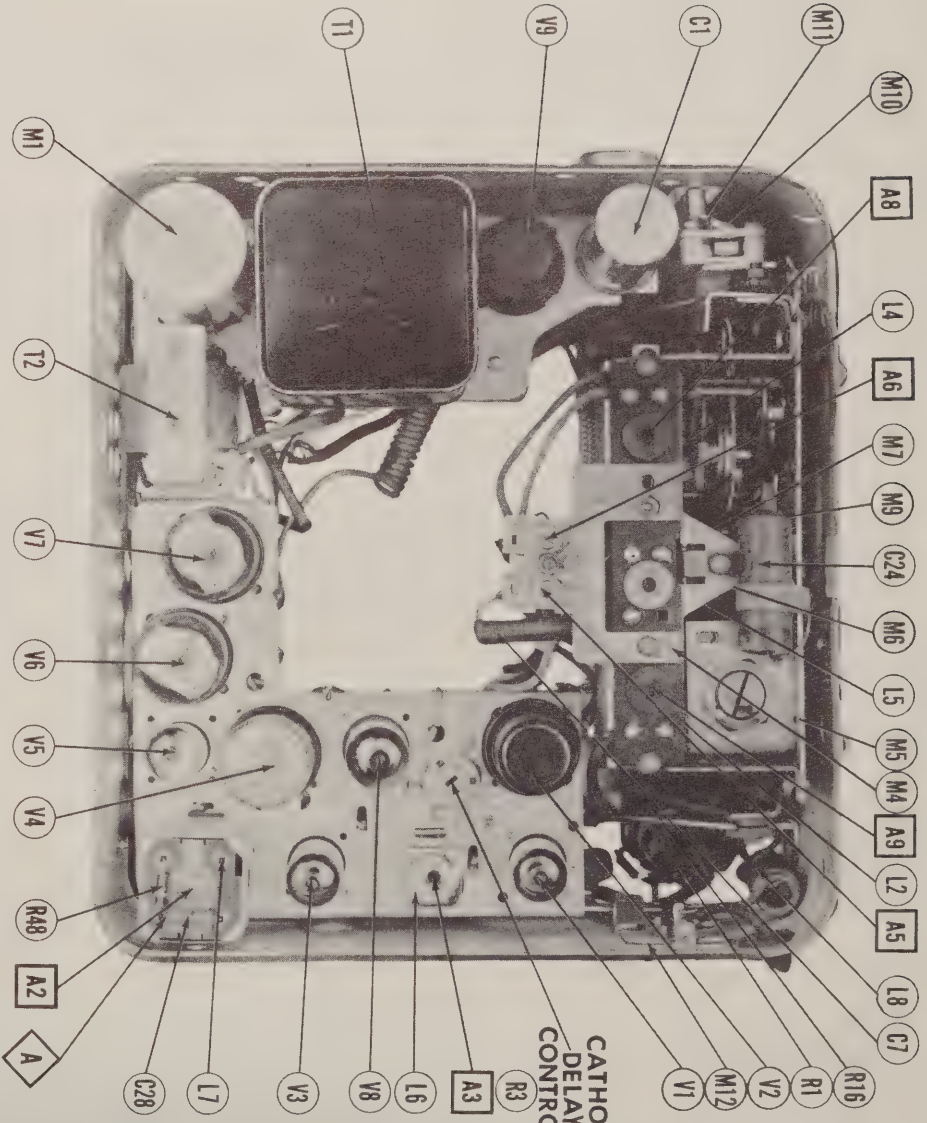
ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CADILLAC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	20	400	M908	E3C152		UP2245C		TVL-3678	■ Filter
B	20	400							▲ Filter
C	20	25							Audio Output Cathode
C2	20	50	1219660	PRS50/25		BR205A		TVA-1306	Phase Inv. Cathode
C3	.05	200	6537	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C4	.05	200	6537	P288-05	DF-503	PTE4S5		2TM-S5	RF Amp. Cathode
C5	68	500	G680	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	RF Coupling
C6	39	500	G390	1469-00004		5R5Q4	NO80-338-261	MS-44	Fixed Trimmer
C7	260		7257567						Fixed Trimmer
C8	.1	400	6539	P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C9	.1	200	6539	P288-1	DF-104	PTE4P1		2TM-P1	IF Amp. Cathode
C10	68	500	G680	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	IF Coupling
C11	.004	600	E402	P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Tone Comp.
C12	.001	600	6527	P688-0001	D6-102	PTE6D2	GP2L-102	6TM-D1	Audio Coupling
C13	220	500	G221	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	AF Amp. Plate
C14	.015	600	7237719	P688-015		PTE6S15		6TM-S15	Audio Coupling
C15	.008	600	1219463						Tone Comp.
C16	.005	600	6531	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C17	.02	600	6534	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C18	.25	200	1211202	P488-25		GT2P25		2TM-P25	Tone Comp. †
C19	.15	100	1218880	P288-15				2TM-P15	Tone Comp.
C20	.008	800	H802			PTE16D8		MB-D8	Audio Output Plate †
C21	.0022	600	1219553	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	DC Amp. Grid Filter
C22	.25	200	E254	P488-25		GT2P25		2TM-P25	Bias Filter
C23	100	500	G101	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	RF Bypass
C24	.5	100	7259954	P185-5		GT2P5		68P20	Hash Filter
C25	.006	1600	H602	P1688-5		PTE16D6		MB-D6	Buffer Cap.
C26	.5	100	7259954	P185-5		GT2P5		68P20	Hash Filter
C27	.005	600	6531	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C28	100	500	G101	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Diode RF Bypass

† When using speakers Part # 7258488 and 7259675, C18 should be .4MFD. and C21 should be .006MFD.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CADILLAC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	Switch		7259240				Sensitivity switch - Front
B	2Meg	½					Volume control and on-off switch - Rear
R2A	Switch		7260682				Tone switch - Front
B	15Ω	2					Speaker control - Rear - Wire wound
R3	2500Ω	1	7259408				Cathode delay control - Wire wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CADILLAC PART No.	IRC PART No.	
R4	2.2Meg	1/2	A225	BTS-2.2Meg	AVC Network
R5	10KΩ	1	B103	BTA-10K	RF Amp. Plate
R6	100Ω	1/2	A101	BTS-100	Sensitivity Network
R7	330KΩ	1/2	A334	BTS-330K	AVC Network
R8	1.5Meg	1/2	A155	BTS-1.5Meg	AVC Network
R9	22KΩ	1/2	A223	BTS-22K	Osc. Grid
R10	12KΩ	2	1212491	BTB-12K	Screen Dropping - See Note 1
R11	10Ω	1/2	A100		Parasitic Suppressor
R12	100Ω	1/2	A101	BTS-100	IF Amp. Cathode
R13	68Ω	1/2	1215558		Sensitivity Network
R14	6.8Meg	1/2	A685	BTS-6.8Meg	AF Amp. Grid
R15	330KΩ	1/2	A334	BTS-330K	Bias Network
R16	270KΩ	1/2	A274	BTS-270K	Tone Compensation
R17	270Ω	1/2	A271	BTS-270	Sensitivity Network
R18	220Ω	1/2	A221	BTS-220	Sensitivity Network
R19	390Ω	1/2	A391	BTS-390	Sensitivity Network
R20	1200Ω	1/2	1213236	BTS-1200	Sensitivity Network
R21	3300Ω	1/2	A332	BTS-3300	Sensitivity Network
R22	150Ω	1/2	A151	BTS-150	AF Amp. Cathode
R23	220KΩ	1/2	A224	BTS-220K	AF Amp. Plate
R24	1600Ω	1/2	1219504	BTS-1500	Phase Inverter Cathode
R25	56KΩ	1/2	1213509	BTA-56K	Cathode Delay Network - See Note 1
R26	6.8Meg	1/2	A685	BTS-6.8Meg	Phase Inverter Grid
R27	220KΩ	1/2	A224	BTS-220K	Phase Inverter Plate
R28	2200Ω	1/2	A222	BTS-2200	Tone Compensation
R29	330Ω	1/2	A331	BTS-330	Feedback
R30	220KΩ	1/2	A224	BTS-220K	Output Grid
R31	220KΩ	1/2	A224	BTS-220K	Output Grid
R32	100KΩ	1/2	A104	BTS-100K	Output Grid
R33	470Ω	1	B471	BTA-470	Output Cathode
R34	39KΩ	1/2	A393	BTS-39K	Tone Compensation
R35	3300Ω	1/2	A332	BTS-3300	Feedback
R36	1200Ω	1/2	1213236	BTS-1200	Feedback
R37	1.5Meg	1/2	A155	BTS-1.5Meg	Sensitivity Network
R38	13KΩ	1	7231539	BTA-12K	Voltage Divider
R39	120KΩ	1/2	1213271	BTS-120K	Relay Trigger Grid
R40	47KΩ	1	B473	BTA-47K	Relay Trigger Cathode
R41	47KΩ	1	B473	BTA-47K	Relay Network
R42	6800Ω	1	1216154	BTA-6800	Relay Trigger Cathode
R43	3.3Meg	1/2	A335	BTS-3.3Meg	DC Amp. Plate
R44	1800Ω	2		BW-2-1800	Filter - Wire Wound
R45	220Ω	1	B221		Hash Suppressor
R46	330KΩ	1/2	A334	BTS-330K	Tone Compensation
R47	1.5Meg	1/2	A155	BTS-1.5Meg	AVC Diode Load
R48	100KΩ	1/2		BTS-100K	Detector Diode Load

Note 1 Some models use parallel resistors to obtain desired value.

TRANSFORMER (VIBRATOR)

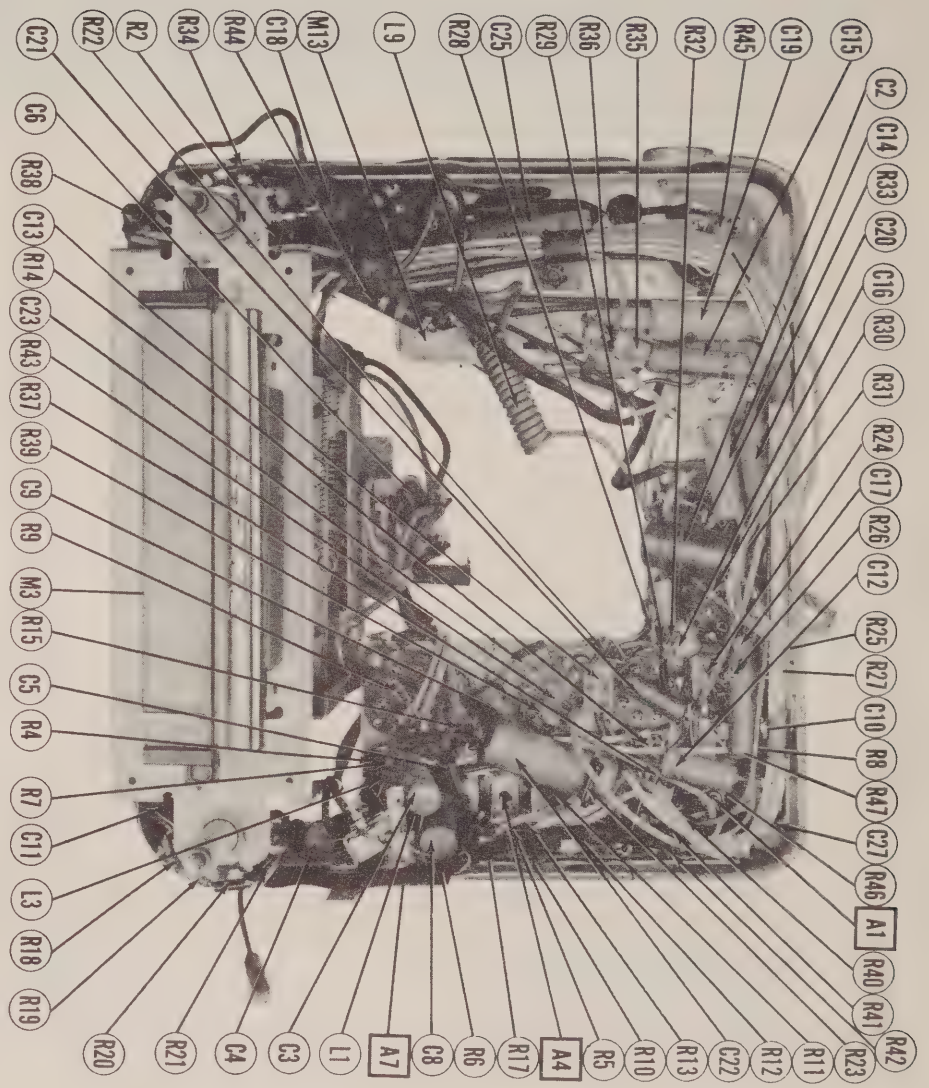
ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CADILLAC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC ② 4.2A	540VCT .062ADC			7255881	P-6473 ③	P-4079	VT-4

② Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CADILLAC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	10KΩ CT	6Ω	370Ω CT	.5Ω	7259336		A-2938		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CADILLAC PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1A	PM	6Ω	7258488		69A3	① Used as front seat alternate in some application.
B	PM	6Ω	7260502 ① 7260849 ②		69A3	② Used as rear seat speaker in model 7260405 only.
	CONE DIA.	V. C. DIA.				
SP2A	6"X9"	1"				
B	6"X9"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CADILLAC PART No.		
L1	Ant. Hash Choke	.6Ω		7255738		
L2	Ant. Coil	10Ω		7257979		
L3	Ant. Coupling Choke	4.6Ω		7240251		
L4	RF Coil	10Ω		7257979		
L5	Osc. Coil	1.1Ω	4Ω	7259184		
L6	1st. IF	38Ω	38Ω	1219508		
L7	2nd. IF	18Ω	9Ω	1219602		
L8	Hash Choke	0Ω		1217846		
L9	Fil. Choke	0Ω		1217846		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				CADILLAC PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT.	6.3V	115∿	8542	5300	5300	

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

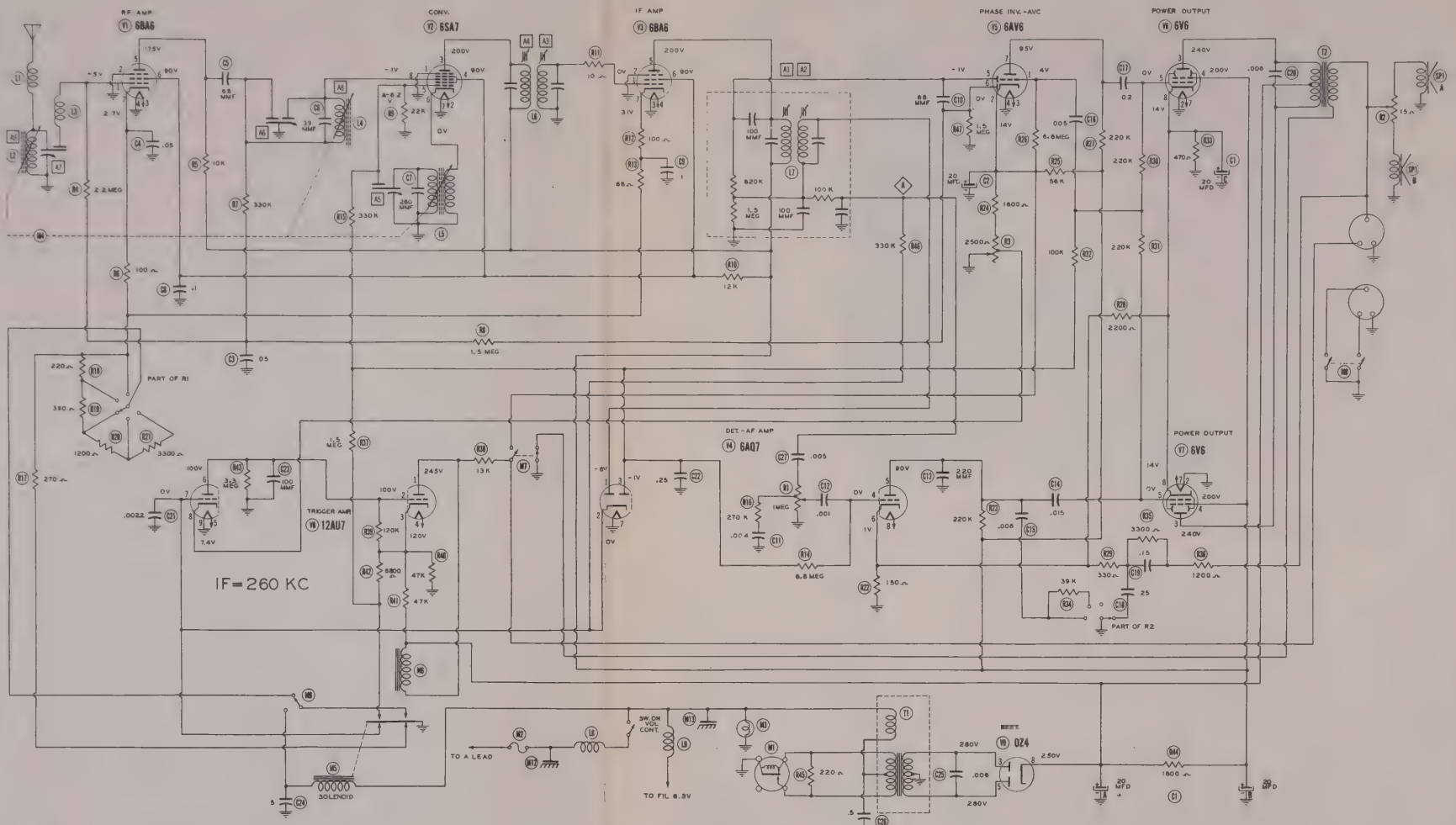
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CADILLAC PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	14A	147685		53307014	155014A	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CADILLAC PART No.		
M3	Bayonet	7.5	.2	White	125588		Type # 51

MISCELLANEOUS

ITEM No.	PART NAME	CADILLAC PART No.	NOTES
M4	Tuner Unit		
M5	Solenoid	1219661	
M6	Relay	7259009	
M7	Switch	7259012	Station Selector
M8	Switch	7268629	Foot Station Selector
M9	Switch	7259011	Tuner Return
M10	Vacuum Value	7260675	Model 7260405
		7258260	Model 7260905
M11	Vacuum Valve Shaft	7260676	Model 7260405
		7259264	Model 7260905
M12	Spark Plate	1219768	
M13	Spark Plate	1217848	
A5	Dual Trimmer	7242454	Osc. Adj.
A6			RF Adj.
A7	Trimmer	7259988	Ant. Adj.



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	5.2Meg	0Ω	.4Ω	0Ω	†12KΩ	†14KΩ	370Ω		
V 2	6SA7	0Ω	.4Ω	†1.8KΩ	†14KΩ	12KΩ	1.1Ω	0Ω	3.3Meg	
V 3	6BA6	43Ω	0Ω	0Ω	.4Ω	†1.8KΩ	†14KΩ	435Ω		
V 4	6AQ7	350KΩ	0Ω	325KΩ	7.1Meg	†220KΩ	150Ω	0Ω	4Ω	
V 5	6AV6	6.8Meg	2.5KΩ	.4Ω	0Ω	1.1Meg	1.3Meg	†220KΩ		
V 6	6V6GT	Inf.	0Ω	†285Ω	†1.8KΩ	845KΩ	480Ω	.4Ω	470Ω	
V 7	6V6GT	0Ω	0Ω	†285Ω	†1.8KΩ	845KΩ	445KΩ	.4Ω	470Ω	
V 8	12AU7	13.5KΩ	†120KΩ	†28KΩ	.4Ω	.4Ω	†120KΩ	0Ω	1.8KΩ	0Ω
V 9	0Z4	0Ω	Inf.	330Ω	Inf.	330Ω	Inf.	Inf.	25KΩ	

& TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V9

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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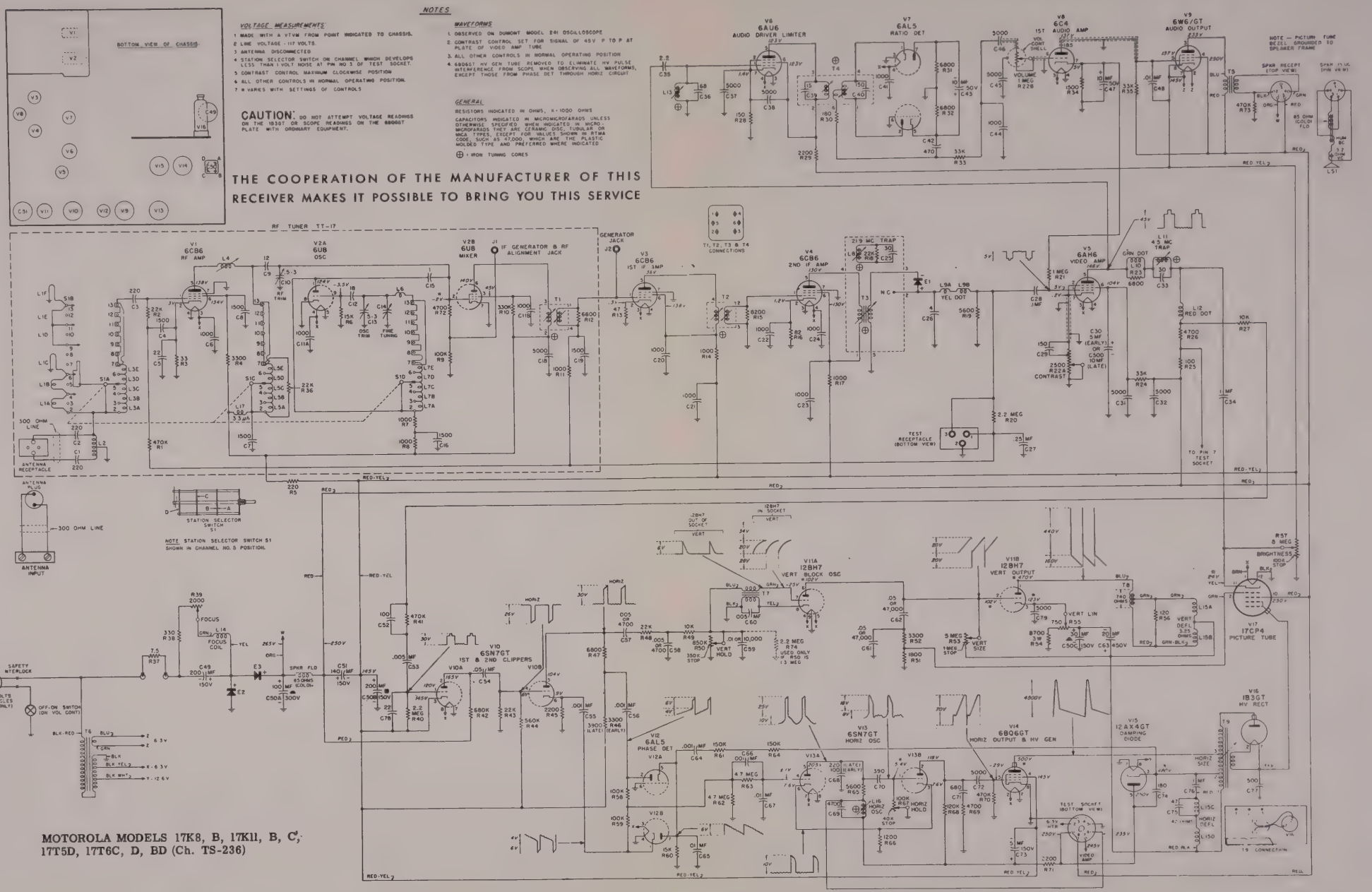
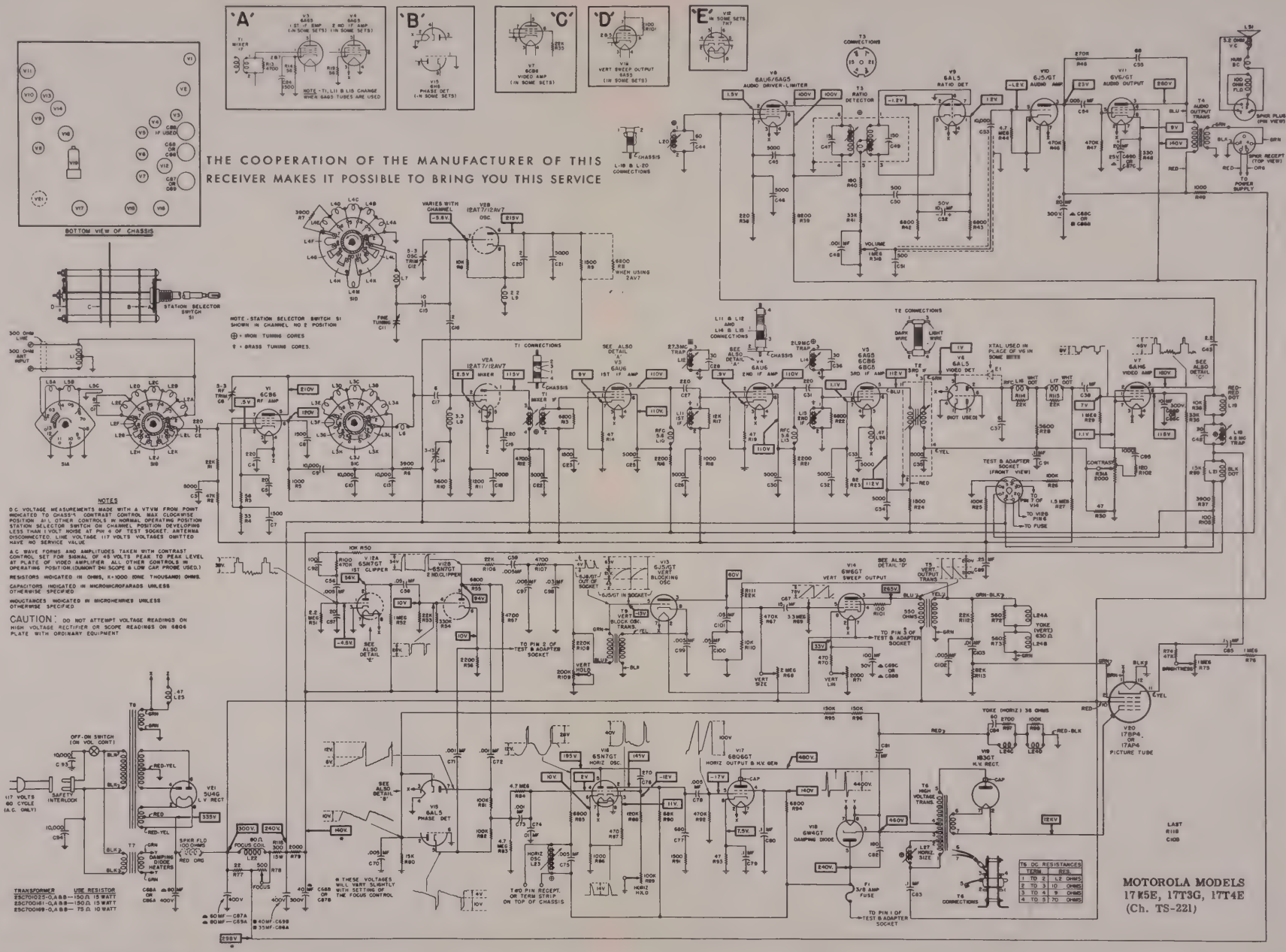

NOTES
VOLTAGE MEASUREMENTS
1 MADE WITH A VTVM FROM POINT INDICATED TO CHASSIS.
2 LINE VOLTAGE - 117 VOLTS.
3 ANTENNA DISCONNECTED.
4 STATION SELECTOR SWITCH OR CHANNEL WHICH DEVELOPS LESS THAN 1 VOLT NOISE AT PIN NO 3 OF TEST SOCKET.
5 CONTRAST CONTROL MAXIMUM CLOCKWISE POSITION
6 ALL OTHER CONTROLS IN NORMAL OPERATING POSITION.
7 # VARIES WITH SETTINGS OF CONTROLS
CAUTION: DO NOT ATTEMPT VOLTAGE READINGS ON THE 1836T OR SCOPE READINGS ON THE 6806GT PLATE WITH ORDINARY EQUIPMENT.
WAVEFORMS
1. OBSERVED ON DUMONT MODEL 241 OSCILLOSCOPE
2. CONTRAST CONTROL SET FOR SIGNAL OF 45 V P TO P AT PLATE OF VIDEO AMP TUBE
3. ALL OTHER CONTROLS IN NORMAL OPERATING POSITION
4. 6806GT HV GEN TUBE REMOVED TO ELIMINATE HV PULSE INTERFERENCE FROM SCOPE WHEN OBSERVING ALL WAVEFORMS, EXCEPT THOSE FROM PHASE DET THROUGH HORIZ CIRCUIT
GENERAL
RESISTORS INDICATED IN OHMS, K=1000 OHMS
CAPACITORS INDICATED IN MICROMICROFARADS UNLESS OTHERWISE SPECIFIED. WHEN INDICATED IN MICRO-MICROFARADS THEY ARE CERAMIC DISC, TUBULAR OR MICA TYPES, EXCEPT FOR VALUES SHOWN IN ATMA CODE, SUCH AS 47,000, WHICH ARE THE PLASTIC MOLDED TYPE AND PREFERRED WHERE INDICATED
⊕ : IRON TUNING CORES
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
BOTTOM VIEW OF CHASSIS
RF TUNER TT-17
V1 6CB6 RF AMP
V2A 6U8 OSC
V2B 6U8 MIXER
J1 IF GENERATOR & RF ALIGNMENT JACK
GENERATOR JACK J2
V3 6CB6 1ST IF AMP
V4 6CB6 2ND IF AMP
T1, T2, T3 & T4 CONNECTIONS
V5 6AH6 VIDEO AMP
V6 6AU6 AUDIO DRIVER LIMITER
V7 6AL5 RATIO DET
V8 6C4 1ST AUDIO AMP
V9 6W6/GT AUDIO OUTPUT
V10 6SN7GT 1ST & 2ND CLIPPERS
V11A 12BH7 VERT BLOCK OSC
V11B 12BH7 VERT OUTPUT
V12 6AL5 PHASE DET
V13 6SN7GT HORIZ OSC
V14 6806GT HORIZ OUTPUT & HV GEN
V15 12AX4GT DAMPING DIODE
V16 1B3GT HV RECT
V17 17CP4 PICTURE TUBE
ANTENNA RECEPTACLE
300 OHM LINE
ANTENNA PLUG
ANTENNA INPUT
STATION SELECTOR SWITCH S1
NOTE STATION SELECTOR SWITCH S1 SHOWN IN CHANNEL NO. 3 POSITION.
SAFETY INTERLOCK
117 VOLTS 60 CYCLES AC ONLY
OFF-ON SWITCH (ON VOL CONT)
SPKR FLD 65 OHMS (COLD)
SPKR RECEPT (TOP VIEW)
SPKR PLUG (BOTTOM VIEW)
65 OHM (COLD) FLD
LS1
TEST RECEPTACLE (BOTTOM VIEW)
TEST SOCKET (BOTTOM VIEW)
TO PIN 7 TEST SOCKET
FOCUS COIL
BRIGHTNESS
VERT SIZE
VERT DEFL
HORIZ SIZE
HORIZ DEFL
VOLUME 1 MEG R22B
CONTRAST 2500 R22A
VERT HOLD
HORIZ HOLD
VERT LIN
VIDEO AMP
DAMPING
19 CONNECTION
MOTOROLA MODELS 17K8, B, 17K11, B, C, 17T5D, 17T6C, D, BD (Ch. TS-236)


'A'
'B'
'C'
'D'
'E'
BOTTOM VIEW OF CHASSIS
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
STATION SELECTOR SWITCH S1
NOTES
CAUTION: DO NOT ATTEMPT VOLTAGE READINGS ON HIGH VOLTAGE RECTIFIER OR SCOPE READINGS ON 6806 PLATE WITH ORDINARY EQUIPMENT
TRANSFORMER USE RESISTOR
T5 DC RESISTANCES
MOTOROLA MODELS 17K5E, 17T3G, 17T4E (Ch. TS-221)

PRELIMINARY DATA

The data contained in this folder is published in advance of regular PHOTOFACT Coverage

SET 152 FOLDER 4 A

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PHOTOFACT* Folder

CORONADO MODELS
15TV2-9101A, 15TV2-9102A

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MODEL 15TV2-9101A

CORONADO MODELS
15TV2-9101A, 15TV2-9102A

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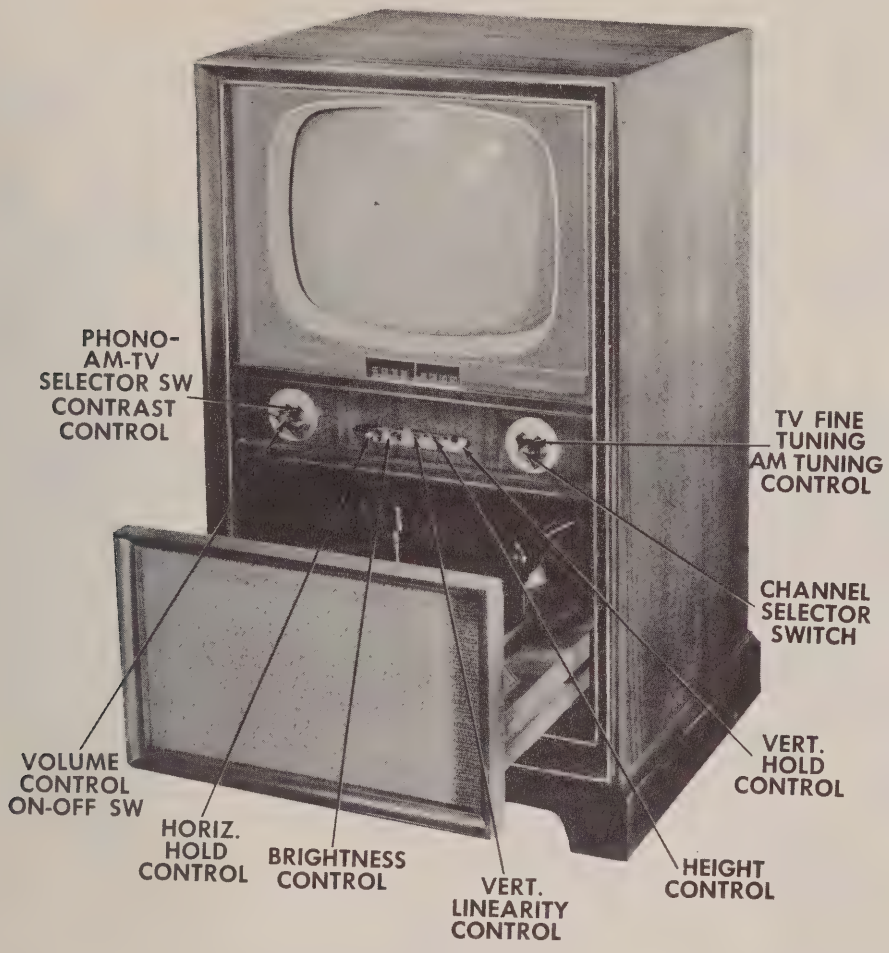
DATE 11-51 SET 152 FOLDER 4

CORONADO MODELS
15TV2-9101A, 15TV2-9102A



CORONADO MODELS
15TV2-9101A, 15TV2-9102A

CORONADO MODEL 15TV2-9101A

TRADE NAME	Coronado, Models 15TV2-9101A, 15TV2-9102A
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th. St., Minneapolis, Minn.
TYPE SET	TV-AM-Phono Combination Receiver
TUBES	Twenty five
POWER SUPPLY	110-120 Volts AC-60Cycle
TUNING RANGE—(TV)	Channels 2 thru 13
(AM)	540-1600KC
RATING (TV)	2.2 Amp. at 117 Volts AC
(RADIO)	1.1 Amp. at 117 Volts AC

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FOR SERVICE INFORMATION ON RECORD CHANGER UNIT SEE VM MODEL 950 - PHOTOFACT SET # 107 FOLDER # 13 OR RECORD CHANGER MANUAL CM-3.

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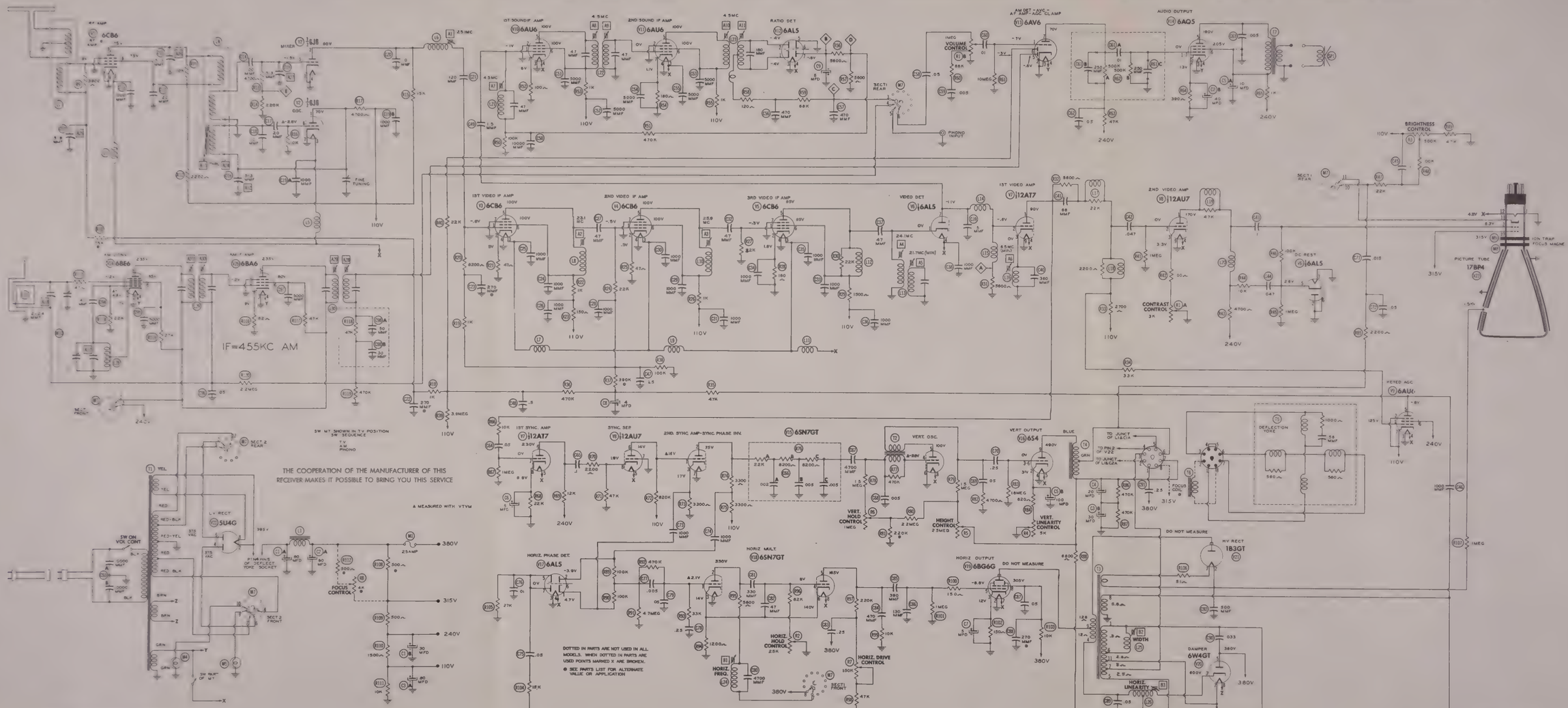
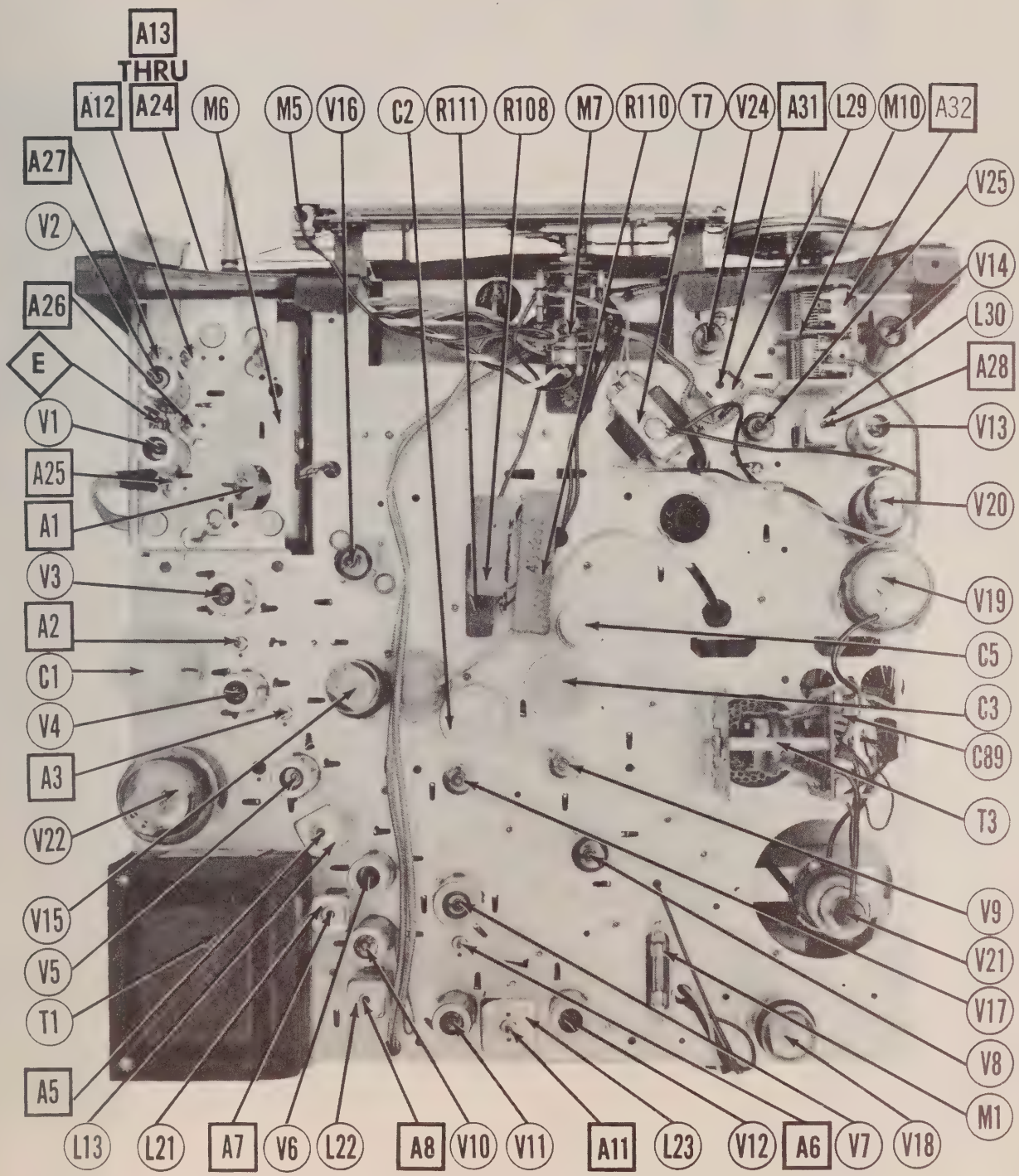
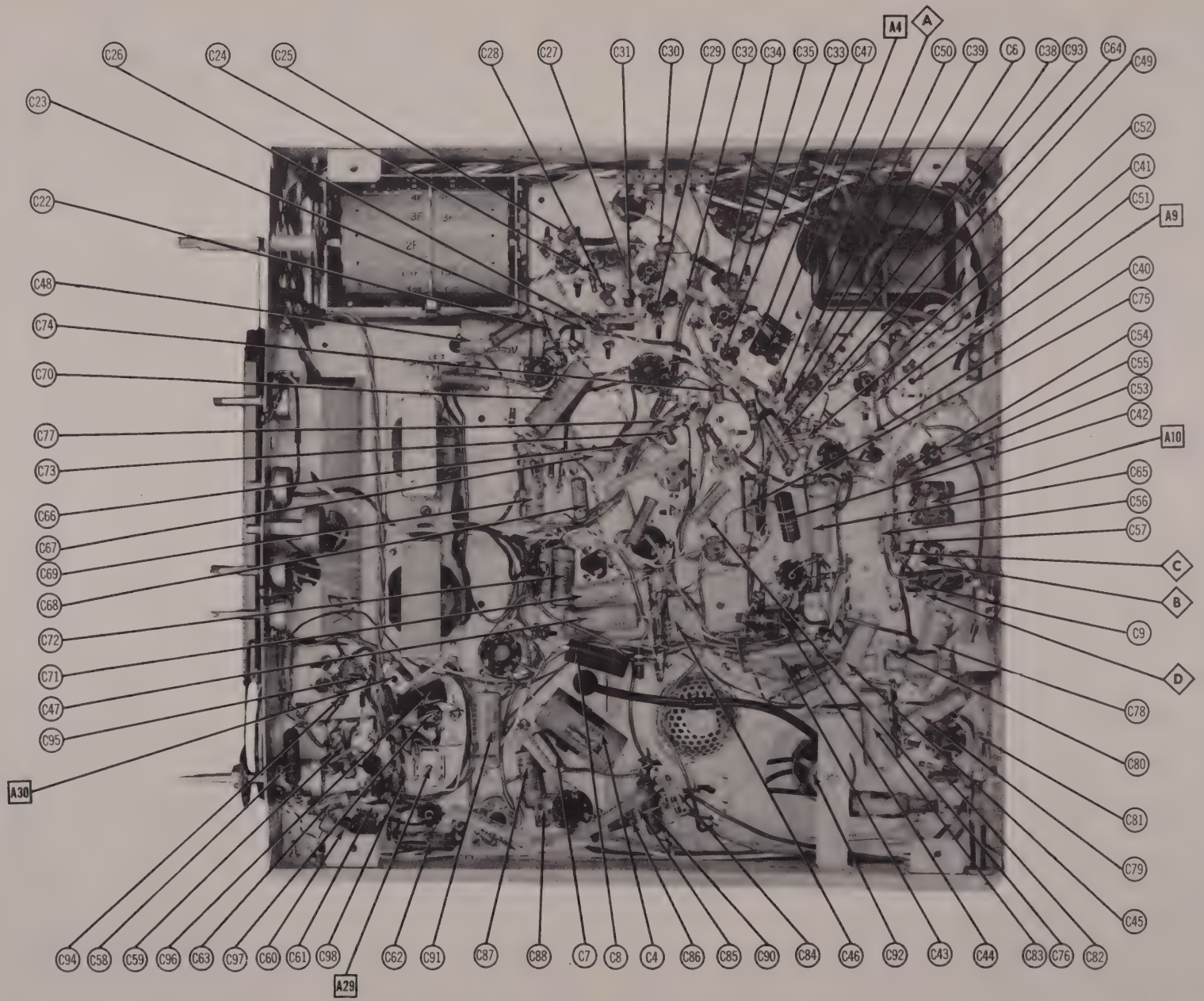

IF=455KC AM
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURED WITH VTVM
SW MT SHOWN IN TV POSITION 3R SEQUENCE
TV
AM
PHONO
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1951
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DO NOT MEASURE
CORONADO MODELS
15TV2-9101A, 15TV2-9102A

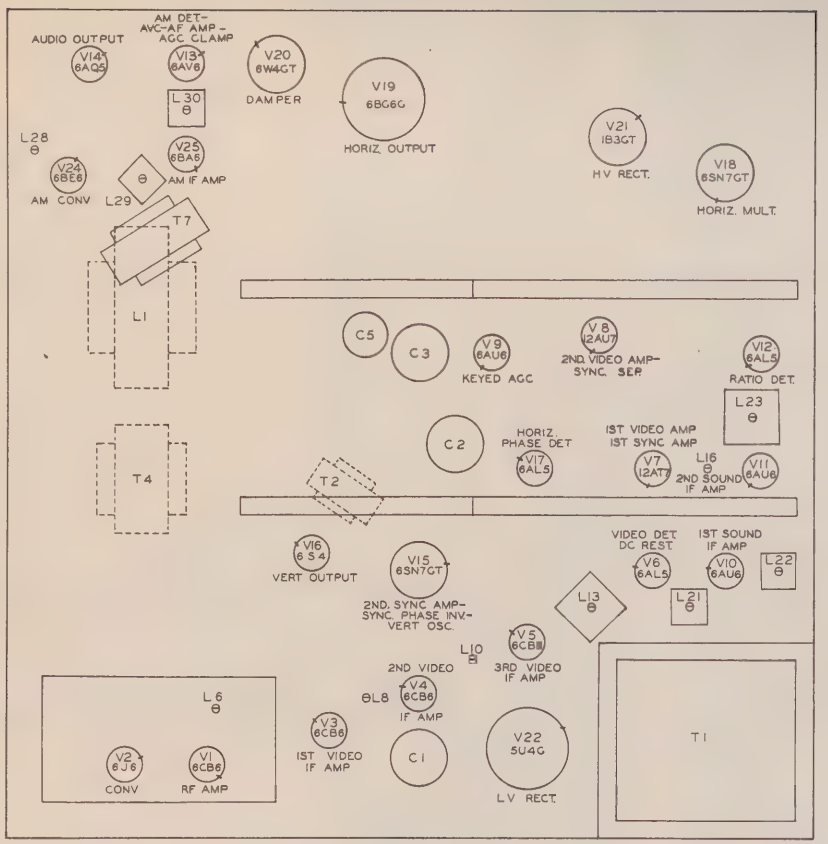
CORONADO MODELS
15TV2-9101A, 15TV2-9102A



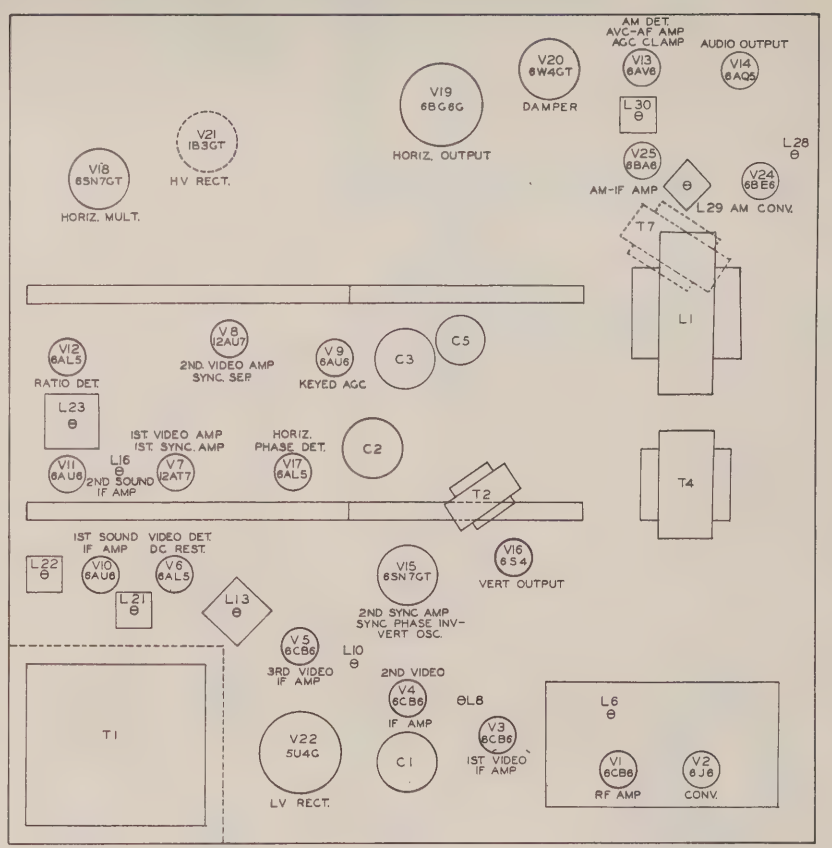
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

CORONADO MODELS
15TV2-910A, 15TV2-910Z

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V18), from its socket.
Turn the function selector to TV.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C47, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25.1MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain less than 2 volt reading.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.7MC 23MC 23.5MC 25.25MC 26.2MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1 thru A4.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	10KΩ carbon resistor	High side thru 10KΩ to pin 7, (plate), of 6AL5, (V6). Low side to chassis	Not used	4.5MC (400∿ Mod.)	Any	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A6	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	10KΩ carbon resistor	High side thru 10KΩ to pin 2 (plate) of 6AL5, (V6). Low side to chassis	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A7, A8, A9, A10	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	10KΩ carbon resistor	High side thru 10KΩ to pin 7, (plate), of 6AL5, (V6). Low side to chassis	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8, A9, A10	Disconnect stabilizer capacitor C9. Adjust for maximum amplitude and symmetry as per figure 2.
9.	"	" "	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A11	Reconnect capacitor C9. Adjust A11 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A12. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted fro any individual channel. If adjustment of A12 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.
The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A13	Adjust to place video marker at 50% on response curve as shown in figure 4.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A14	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A15	
			195MC (10MC SWP)	193.25MC 195.75MC	10		A16	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A17	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A18	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A19	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A20	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A21	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A22	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A23	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A24	

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across Antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209175MC	12	Vert. Amp. thru 10KΩ to Point (E). Low side to chassis.	A25, A26 A27	Adjust for response curve similar to figure 5 with markers above 90%.
12.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 5. If markers fall below 70% on any channel, make slight adjustment of A25, A26, and A27 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

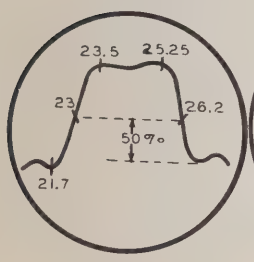


FIG.1

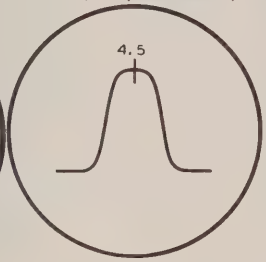


FIG. 2

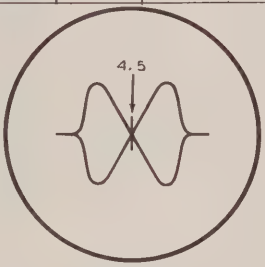


FIG. 3

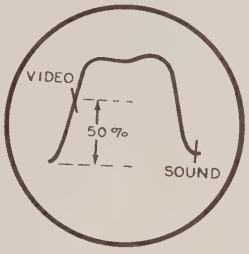


FIG. 4

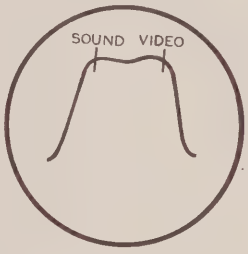


FIG. 5

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the function selector to AM.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13.	.1MFD.	High side to pin 7, (Grid), of 6BE6, (V24). Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open.	Across voice coil.	A28, A29 A30, A31	Adjust for maximum output.
14.	"	"	1620KC	"	"	"	A32	"
15.		Loop	1400KC	"	Tune for max. signal.	"	A33	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Set pointer to 1400 on dial scale.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

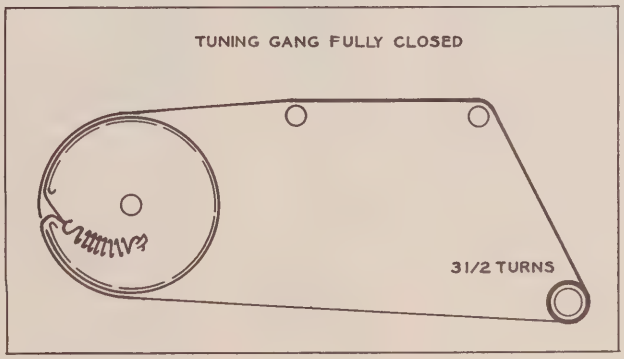
Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the width slug, (B2) until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B3), until the picture is symmetrical from left to right.

DIAL CORD STRINGING

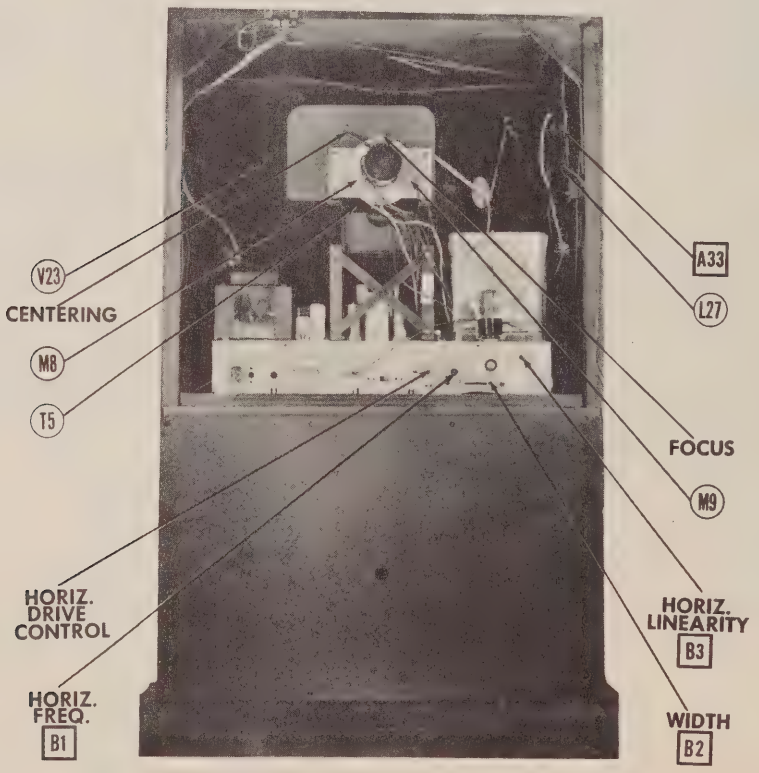


RESISTANCE MEASUREMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	810KΩ	0Ω	.1Ω	0Ω	†4.7KΩ	†4.7KΩ	0Ω		
V 2	6J6	†7.2KΩ	†17KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 4	6CB6	120KΩ	47Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 5	6CB6	22KΩ	180Ω	.1Ω	0Ω	†4KΩ	†4KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	0Ω	.1Ω	1Meg	0Ω	5.6KΩ		
V 7	12AT7	†11KΩ	5.6KΩ	.2Ω	.1Ω	.1Ω	†13KΩ	1Meg	22KΩ	0Ω
V 8	12AU7	†5.7KΩ	1Meg	295Ω	.1Ω	.1Ω	†820KΩ	0Ω	47KΩ	0Ω
V 9	6AU6	†36KΩ	†2.5KΩ	0Ω	.1Ω	550KΩ	†1KΩ	†2.5KΩ		
V 10	6AU6	100KΩ	0Ω	0Ω	.1Ω	†3.5KΩ	†3.5KΩ	100Ω		
V 11	6AU6	2.4Ω	0Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	180Ω		
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	Inf.	11.2KΩ		
V 13	6AV6	10Meg	0Ω	0Ω	.3Ω	515KΩ	800KΩ	†550KΩ		
V 14	6AQ5	500KΩ	390Ω	0Ω	.3Ω	†2.4KΩ	†2KΩ	500KΩ		
V 15	6SN7GT	†820KΩ	†9.1KΩ	3.3KΩ	1.9Meg	2.4Meg	0Ω	0Ω	.1Ω	
V 16	6S4	Inf.	1.3KΩ	1.8Meg	0Ω	.1Ω	1.8Meg	Inf.	Inf.	#7.8KΩ
V 17	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	27KΩ	Inf.	27KΩ		
V 18	6SN7GT	5.1Meg	†5.6KΩ	1.2KΩ	100KΩ	#400KΩ	1.2KΩ	0Ω	.1Ω	
V 19	6BG6G	Inf.	0Ω	150Ω	Inf.	1Meg	1Meg	.1Ω	†10KΩ	Top Cap #18Ω
V 20	6W4GT	Inf.	6.8KΩ	450KΩ	Inf.	†52Ω	12Ω	#8Ω	#8Ω	
V 21	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #140Ω
V 22	5U4G	Inf.	11KΩ	Inf.	22Ω	Inf.	20Ω	Inf.	11KΩ	
V 23	17BP4	0Ω	1.1Meg	PIN 10 †550Ω	PIN 11 †170KΩ	PIN 12 .1Ω				
V 24	6BE6	22KΩ	.4Ω	0Ω	.1Ω	▲†1KΩ	▲†28KΩ	2.6Meg		
V 25	6BA6	2.6Meg	0Ω	0Ω	.1Ω	▲†1KΩ	▲†47KΩ	82Ω		

ALL CONTROLS SET FOR NORMAL OPERATION
ALL MEASUREMENTS TAKEN IN TV POSITION UNLESS NOTED
† MEASURED FROM PIN 2 OF V22
# MEASURED FROM PIN 3 OF V20
▲ MEASURED IN AM RADIO POSITION



CABINET-REAR VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6CB6	6CB6	7CM	
B	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V7	1st. Video Amp.-1st. Sync. Amp.	12AT7	12AT7	9A	
V8	2nd. Video Amp.-Sync. Separator	12AU7	12AU7	9A	
V9	Keyed AGC 6AU6	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AM Detector-AVC-AF Amplifier-AGC Clamp	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
	Sync. Phase Inv.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V16	Vertical Output	6S4	6S4	9AC	
V17	Horizontal Phase Detector	6AL5	6AL5	6BT	
V18	Horizontal Mult.	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6BG6G	6BG6G	5BT	
V20	Damper	6W4	6W4	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	
V24	AM Converter	6BE6	6BE6	7CH	
V25	AM IF Amplifier	6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	CORONADO PART No.	SYLVANIA PART No.	THOMAS PART No.		
V23	17BP4	17BP4	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	80	450	45X376	AFH3-44		UP8445		TVL-2777	▲ Filter
B	30	450							▲ Decoupling
C2A	80	450	45X384 ††	AFH2-91		UPT8045-V5		TVL-2710	▲ Filter
B	40	50							▲ Audio Output Cathode
C3A	80	450	45X376	AFH3-44		UP8445		TVL-2777	▲ Decoupling
B	30	450							▲ Vert. Output Dec.
C4	20	450	45X382	PRS450/20		BR2045A		TVA-1709	Vert. Output Dec.
C5A	10	450	45X385	AFH1-11		UPT2150-V10		TVL-1705	■ Audio Output Dec.
B	100	50						TVA-1310	▲ Vert. Output Cathode
C6	5	25	45X378	PRS150/4		BR550		TVA-1203	Sync. Amp. Cathode
C7	5	25	45X378	PRS150/4		BR550		TVA-1203	Horiz. Output Cathode
C8	4	100	45X361	PRS150/4		BR415		TVA-1402	AGC Filter
C9	5	25	45X378	PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C10	3-9		31B-207		829-10				Variable Trimmer
C11	.5-3		31B-205		829-3				Variable Trimmer
C12	120		13D-045	SI120	D6-121		GP2K-121	5GA-T12	RF Amp. Dec.
C13	1000		13D-047	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C14	100		13D-046	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C15	.5-3		31B-205		829-3				Variable Trimmer
C16	.5-3		38B-206		829-3				Variable Trimmer
C17	20		13D-042	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C18	10		13D-064	SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C19A	1000		13D-071	BPD-2X001	DD-2-102		812-001	5HK-2D1	Conv. Fil.
B	1000								RF Bypass
C20	10		13D-053	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C21	120		13B-033	SI120	D6-121		GP2K-121	5GA-T12	IF Coupling
C22	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	AGC Filter ¶
C23	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	AGC Filter ¶
C24	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Dec.
C25	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Fil.
C26	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C27	47	500	47X565	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C28	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C29	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Dec.
C30	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Fil.
C31	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C32	47	500	47X565	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C33	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Dec.
C34	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Cathode
C35	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Fil.
C36	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C37	47	500	47X565	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	IF Coupling
C38	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C39	5		47X562	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C40	360	500	47X568						Fixed Trimmer
C41	68		47X599		TCZ-68		NP0-333-680	5TCC-Q68	Video Coupling
C42	.047	400	D65503	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C43	.1	600	46X403	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C44	.047	400	D65503	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C45	.1	200	B65104	P288-1	DF-104	PTE4P1		2TM-P1	Picture Tube Cathode
C46	1000	500	47X569	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Feedback
C47	.25	200	B65254	P488-25		GT2P25		2TM-P25	AGC Filter
C48	.5	400	B65504	484-5		GT4P5		4TM-P5	AGC Filter
C49	1.5		47X584	SI1.5NP0	TCZ-1.5		NP0K-1R5		Sound IF Coupling
C50	10000		47X595	BPD-01	DD-103	1D3S1	821-01	5HK-S1	1st. Sound IF Grid
C51	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Dec.
C52	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C53	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Dec.
C54	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Cathode
C55	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Fil.
C56	470	500	47X525	1468-0006	D6-471	5W5T5	GP2K-471	1FM-35	RF Bypass
C57	470	500	47X525	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	De-emphasis
C58	.05	200	B65503	P388-06	DF-503	PTE4S5		2TM-S5	Audio Coupling
C59	.005	600	B65502	P688-006	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C60	.01	200	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C61A	.01								Audio Coupling
B	250		¶76X5				♦PC-80		AF Amp. Plate
C									Audio Output Grid
C62	.05	400	D65503	P488-06	DF-503	PTE4S5		4TM-S5	RF Bypass
C63	.005	600	F65502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C64	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Sync. Coupling
C65	.1	400	D65104	P488-1	DF-104	PTE4P1		4TM-P1	Sync. Coupling
C66A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		¶76X7	P688-005	♦PC-100	PTE6D5	GP2-333-502		Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C67	4700	500	47X543	1464-005		1DR5D4		MS-25	Vert. Osc. Grid Cap.
C68	.005	200	B65502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid Cap.
C69	.05	800	F65503	P688-05	DF-503	PTE8S5		6TM-S5	Vert. Discharge
C70	.25	400	D65254	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C71	.015	600	F65153	P488-015		PTE6S15		6TM-S15	Vert. Sweep Coupling
C72	.05	600	F65503	P688-05	DF-503	PTE8S5		6TM-S5	Integrator Net.
C73	1000		47X519	S11000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C74	1000		47X519	S11000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C75	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Horiz. Feedback
C76	.01	200	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Voltage Divider
C77	.005	600	F65502	P688-006	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Filter
C78	.25	200	B65254	P488-25		GT2P25		2TM-P25	AFC Filter
C79	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Horiz. MV Grid
C80	4700	500	47X543	1464-005		1DR5D5		MS-25	Fixed Trimmer
C81	330	500	47X370	1469-00035					Horiz. MV Feedback
C82	47	500	47X565	1469-00005		5R5Q5		MS-45	Horiz. MV Grid
C83	.25	400	D65254	P488-25		GT4P25		4TM-P25	Horiz. MV Dec.
C84	470	500	47X525	1469-0005		5R5T5		MS-35	Horiz. Discharge
C85	390	500	47X571	1468-0004	D6-391	5W5T4	GP2K-391	1FM-34	Horiz. Sweep Coupling
C86	130	500	RCM20A131K	1469-00015		5R5T15			Voltage Divider
C87	.05	600	F65503	P688-05	DF-503	PTE8S5		6TM-S5	Horiz. Output Screen
C88	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Horiz. Output Screen ¶
C89	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Fixed Trimmer
C90	.03	400	D65303	P488-03		PTE6S3		6TM-S3	Horiz. Sweep Coupling
C91	.25	400	D65254	P488-25		GT4P25		4TM-P25	Horiz. Sweep Coupling
C92	500	20000	47X560	HV20-C	TV3-502				HV Filter
C93A	10000		¶76X8	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	Line Filter
B	10000			BPD-01		1D3S1	821-01	5HK-S1	Line Filter
C94	47		47X498	S147NP0	TCZ-47		NP0K-470	5TCC-Q47	AM Osc. Grid Cap.
C95	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AM Osc. Anode
C96	.05	200	D65503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C97	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	IF Amp. Screen
C98A	50		S150			5W5Q5	GP1K-500		Diode RF Filter
B	50		¶76X1	S150	♦PC-52	5W5Q5	GP1K-500	††100C1	Diode RF Filter

¶ Some models use 1000MMF in this application. (Part # 47X519)
♦ Items C66A, C66B, C66C, R76A, R76B, R76C are combined in one unit.
† Items C98A, C98B, R118 are combined in one unit.
‡ Items C61A, C61B, C61C, R62A, R62B are combined in one unit. When replacing with separate units, C61B and C61C should total 250MMF.
†† In late productions, this capacitor may be 80MFD at 450V and 100MFD at 50V.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
				Concentrikit			
R1A	3000Ω	½		B11-112 *			Contrast Control - Front
B	1Meg	½	78X7	B13-137X *	RTV-218		Volume Control and Switch, Tapped at 200 KΩ - Rear
C	Shaft end			E-187 *			Attach per instructions in "Concentrikit"
D	Switch			76-1 *			Attach per instructions in "Concentrikit"
R2A	25KΩ	¼	40X330	Q11-120	AG-40-S	B-26	Horiz. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R2A per instructions
R3A	500KΩ	½	40X290	Q11-133	AG-58-S	B-59	Brightness Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R3A per instructions
R4A	5000Ω	½	40X294	Q11-114	AM-19-S		Vert. Linearity Control
B	Shaft		Not req.	PQ ¶	RS-2 ¶		Attach to R4A per instructions
C	Bushing		Not req.	83	59-186		Attach to R4A per instructions
R5A	2.5Meg	½	40X393	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not req.	SQ	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	1Meg	½	40X291	Q11-137	AG-61-S	AN-69	Vert. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R6A per instructions
R7A	150KΩ	½	40X331	Q11-130 ∮	AG-52-S		Horiz. Drive Control
B	Shaft		Not req.	Not req.	FKS-1/4		Attach to R7A per instructions
R8	4000Ω	4	40X304				Focus Control - Wire Wound - See Note

* Additional parts to be used with "Concentrikit"
¶ Fashion Shaft to duplicate original
∮ Shunt control terminals with IRC, BTS-390KΩ resistor
Note : R8 is not used in models employing a PM focus magnet.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	3900Ω	½	12A-046	BTS-3900	Antenna Coil Shunt
R10	75KΩ	½			AGC Network - See Note 1
R11	10KΩ	½	12A-040		RF Coil Shunt
R12	2200Ω	½	12A-049	BTS-2200	RF Amp. Decoupling
R13	4700Ω	½	12A-042	BTS-4700	Mixer Grid
R14	220KΩ	½	12A-041		Mixer Grid
R15	15KΩ	½	12A-021		Mixer Plate
R16	10KΩ	½	12A-040		Osc. Grid
R17	4700Ω	½	12A-042	BTS-4700	Osc. Plate
R18	1000Ω 20%	½	B85102	BTS-1000	AGC Network
R19	1000Ω 20%	½	B85102	BTS-1000	AGC Network
R20	8200Ω 5%	½	B83822		1st. Video IF Amp. Grid

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	IDENTIFICATION CODES
R21	47Ω 5%	½	B83470		1st. Video IF Amp. Cathode
R22	1000Ω 20%	½	B85102	BTS-1000	1st. Video IF Amp. Decoupling
R23	150Ω	½	B84151	BTS-150	1st. Video IF Amp. Decoupling
R24	22KΩ	½	B83223		2nd. Video IF Amp. Grid
R25	47Ω 5%	½	B83470		2nd. Video IF Amp. Cathode
R26	1000Ω	½	B85102	BTS-1000	2nd. Video IF Amp. Decoupling
R27	22KΩ	½	B84223		3rd. Video IF Amp. Grid
R28	180Ω	½	B84181	BTS-180	3rd. Video IF Amp. Cathode
R29	1500Ω	½	B85152	BTS-1500 ♦	3rd. Video IF Amp. Decoupling
R30	22KΩ	½	B84223		3rd. Video IF Amp. Plate Coil Shunt
R31	5600Ω 5%	½	B83562	BTS-5600 5%	Video Det. Diode Load
R32	5600Ω	1	C84562	BTA-5600	1st. Video Amp. Plate
R33	2700Ω 5%	1	C83272	BTA-2700 5%	Voltage Divider
R34	33KΩ	½	B84333	BTS-33K	AGC Keying Grid
R35	47KΩ 20%	½	B84473	BTS-47K	AGC Keying Plate
R36	470KΩ 20%	½	B84474	BTS-470K	AGC Keying Plate
R37	390KΩ	½	B84394	BTS-390K	AGC Network - See Note 2
R38	100KΩ	½	B84104	BTS-100K	AGC Network
R39	3.9Meg	½	B84395	BTS-3.9Meg	Voltage Divider
R40	22KΩ	½	B84223	BTS-22K	AGC Network
R41	1Meg	½	B85105	BTS-1Meg	2nd. Video Amp. Grid
R42	100Ω	½	B84101	BTS-100	2nd. Video Amp. Cathode
R43	4700Ω 5%	1	C83472	BTA-4700 5%	2nd. Video Amp. Plate
R44	10KΩ	½	B84103	BTS-10K	Isolation
R45	1Meg	½	B85105	BTS-1Meg	DC Rest. Diode Load
R46	100KΩ 20%	½	B85104	BTS-100K	Picture Tube Grid
R47	22KΩ 20%	½	B84223	BTS-22K	Picture Tube Cathode
R48	100KΩ	½	B84104	BTS-100K	Picture Tube Cathode
R49	47KΩ 20%	½	B85473	BTS-47K	Voltage Divider
R50	100KΩ	½	B84104	BTS-100K	AVC Network
R51	470KΩ 20%	½	B84474	BTS-470K	AVC Network
R52	100Ω	½	B84101	BTS-100	1st. Sound IF Amp. Cathode
R53	1000Ω 20%	½	B85102	BTS-1000	1st. Sound IF Amp. Decoupling
R54	180Ω 20%	½	B84181	BTS-180	2nd. Sound IF Amp. Cathode
R55	1000Ω 20%	½	B85102	BTS-1000	2nd. Sound IF Amp. Decoupling
R56	5600Ω	½	B83562	BTS-5600	Ratio Det. Diode Load
R57	5600Ω	½	B83562	BTS-5600	Ratio Det. Diode Load
R58	120Ω	½	B84121	BTS-120	Balancing
R59	68KΩ	½	B84683	BTS-68K	De-emphasis
R60	68KΩ	½	B84683	BTS-68K	Tone Compensation
R61	10Meg	½	B85106	BTS-10Meg	AF Amp. Grid
R62A	500KΩ	3	¶76X5 †		AF Amp. Plate
B	500KΩ				Audio Output Grid
R63	47KΩ 20%	½	B84473	BTS-47K	AF Amp. Decoupling
R64	390Ω	1	C84391	BTA-390	Audio Output Cathode
R65	1000Ω	2	D84102	BTB-1000	Audio Output Decoupling
R66	10KΩ	½	B84103	BTS-10K	Isolation
R67	1Meg	½	B85105	BTS-1Meg	1st. Sync. Amp. Grid
R68	22KΩ	½	B84223	BTS-22K	1st. Sync. Amp. Cathode
R69	12KΩ	½	B84123	BTS-12K	1st. Sync. Amp. Plate
R70	2200Ω	½	B84222	BTS-2200	Phase Correction
R71	47KΩ	½	B84473	BTS-47K	Sync. Sep. Cathode
R72	820KΩ	½	B84824	BTS-820K	Sync. Sep. Plate
R73	3300Ω 5%	½	B83333	BTS-3300 5%	2nd. Sync. Amp. Cathode
R74	3300Ω	½	B84332	BTS-3300	2nd. Sync. Amp. Plate
R75	3300Ω 5%	½	B83332	BTS-3300 5%	2nd. Sync. Amp. Plate
R76A	22KΩ	½	¶76X7 ♦		Integrator Network
B	8200Ω	½			Integrator Network
C	8200Ω	½			Integrator Network
R77	470KΩ	½	B84474	BTS-470K	Vert. Osc. Transformer Shunt
R78	1.5Meg	½	B84155	BTS-1.5Meg	Vert. Osc. Grid
R79	1.5Meg	½	B84155	BTS-1.5Meg	Vert. Osc. Plate
R80	2.2Meg 20%	½	B85225	BTS-2.2Meg	Voltage Divider
R81	220KΩ 20%	½	B85224	BTS-220K	Voltage Divider - See Note 3
R82	4700Ω	½	B84472	BTS-4700	Vert. Peaking
R83	1.8Meg	½	B84185	BTS-1.8Meg	Vert. Output Grid
R84	820Ω	½	B84821	BTS-820	Vert. Output Cathode
R85	2200Ω 20%	½	B85223	BTS-2200	Vert. Retrace Blanking Network
R86	470KΩ	½	B84474	BTS-470K	Voltage Divider
R87	470KΩ	½	B84474	BTS-470K	Voltage Divider
R88	6800Ω	5	43X268		Decoupling - Wire Wound
R89	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Load
R90	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Load
R91	4.7Meg 20%	½	B85475	BTS-4.7Meg	Horiz. Phase Det. Load ♦
R92	470KΩ 20%	½	B85474	BTS-470K	Horiz. AFC Filter
R93	33KΩ	½	B84333	BTS-33K	Horiz. AFC Filter
R94	1200Ω	½	B84122	BTS-1200	Horiz. Mult. Cathode
R95	5600Ω	½	B84562	BTS-5600	Horiz. Mult Plate
R96	82KΩ	½	B84823	BTS-82K	Horiz. Mult. Grid
R97	220KΩ 20%	½	B85224	BTS-220K	Horiz. Mult. Plate
R98	47KΩ	½	B84473	BTS-47K	Horiz. Mult. Plate Decoupling
R99	10KΩ	½	B84103	BTS-10K	Horiz. Peaking
R100	150Ω	½	B84151		Parasitic Suppressor
R101	1Meg	½	B84105	BTS-1Meg	Horiz. Output Grid
R102	150Ω	5	43X263	1 3/4A-150	Horiz. Output Cathode - Wire Wound
R103	10KΩ	5	43X247	1 4/4A-10K	Horiz. Output Screen - Wire Wound
R104	15KΩ	1	C84153	BTA-15K	Horiz. Feedback Network
R105	27KΩ	½	B84273	BTS-27K	Horiz. Feedback Network
R106	5.1Ω	½	43X239		HV Rect. Filament - Wire Wound
R107	1Meg	½	C85105		HV Filter
R108	500Ω	10	43X245	1 3/4A-500	Voltage Divider - Wire Wound - See Note 4
R109	500Ω	10	43X245	1 3/4A-500	Voltage Divider - Wire Wound
R110	1500Ω	15	43X261	2D-1500	Filter Network - Wire Wound
R111	10KΩ	10	43X267	1 3/4A-10K	Bleeder - Wire Wound
R112	500Ω	5	43X257	1 3/4A-500	Focus Coil Shunt - Wire Wound - See Note 4
R113	47Ω	½	B85470		Parasitic Suppressor
R114	22KΩ	½	B84223	BTS-22K	Osc. Grid
R115	27KΩ	2	D84273	BTB-27K	Osc. Anode
R116	82Ω	½	B84820	BTS-82	AM IF Amp. Cathode
R117	47KΩ	1	C84473	BTA-47K	AM IF Amp. Screen
R118	47KΩ	½	76X1 †	BTS-47K	Diode RF Filter
R119	470KΩ	½	B84474	BTS-470K	AM Det. Diode Load
R120	2.2Meg	½	B85225	BTS-2.2Meg	AVC Network

¶ Items R62A, R62B, C61A, C61B and C61C are combined into one unit.
♦ Items R76A, R76B, R76C, C66A, C66B and C66C are combined into one unit.
† Items R118, C98A and C98B are combined into one unit.
Note 1 Some models use a 47KΩ resistor in this application.
Note 2 Some models use a 430KΩ resistor in this application.
Note 3 Some models use a 180KΩ resistor in this application.
Note 4 Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	720VCT	550VCT	5VAC ⓐ 3A	53X323		P-3067	
	ⓐ 2.2A	.250ADC	.075ADC	SEC. 4 6.3VAC ⓐ 1.2A				
				SEC. 5 6.3VAC ⓐ 8.6A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1.15KΩ	54X7	A-8122 ①	A-3000①	TBO-2 ①	Vert. Block Osc. Trans.
T3	140Ω	10.6Ω	53X320		HVO-7 and		Horiz. Output Trans.
	Tap 12Ω	Taps ⓐ .3Ω, 3.1Ω and 8.1Ω			MWC-1		
		SEC. 2 5.6Ω					
		SEC. 3 0Ω					
T4	1KΩ		51X151	A-8112	A-3037 ①	TSO-5 ①	Vert. Output Trans.
	Tap 12Ω						
T5A	19Ω		9A2195	DY-7	MDF-70		Horiz. Deflection Coils
B	53Ω						Vert. Deflection Coils
T6			9A2162 ②				Focus Coil

① Drill one new mounting hole.
② Not used in all models, PM type listed under misc. column.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.7KΩ	3.7Ω	400Ω	.6Ω	51X154	A-3877	A-2930	RO-9	

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA CORONADO PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.7Ω		ST115 Model P8-V	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 MA)	REPLACEMENT DATA CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250A	52Ω	2 Henries	52X88	C-2326	C-2991	TR-3300①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω	9A2119	Channel #2 - Part of Tuner # 25A1087
L3	Fil. Choke	0Ω			Part of Tuner # 25A1087
L4	RF, Mixer Grid and Osc. Coil	0Ω		9A2131	Channel # 2-Part of Tuner # 25A1087
L5	Fil. Choke	0Ω			Part of Tuner # 25A1087
L6	1st. Video IF	.7Ω		31A-095	
L7	Fil. Choke	0Ω		9A2033	
L8	2nd. Video IF	.2Ω		9AZ225	
L9	Fil. Choke	0Ω		9A2033	
L10	3rd. Video IF	.2Ω		9A2225	
L11	Fil. Choke	0Ω		9A2033	
L12	Plate Choke	2.5Ω		9A1979	
L13	4th. Video IF	.2Ω	0Ω	9A2236	
L14	Peaking	10Ω		36A1	100 Microhenries (yellow dot)
L15	Peaking	30Ω		36A5	750 Microhenries (green dot)
L16	4.5MC Trap	.2Ω		9A2074	
L17	Peaking	14Ω		36A7	190 Microhenries wound on 22KΩ resistor (orgnge dot)
L18	Peaking	15Ω		36A4	215 Microhenries wound on 2.2KΩ resistor (red dot)
L19	Peaking	13Ω		36A8	185 Microhenries on 47KΩ resistor (brown dot)
L20	Peaking	14Ω		36A2	190 Microhenries (white dot)
L21	Sound Takeoff	2.8Ω		9A2168	
L22	Sound IF	2.4Ω	2.4Ω	9A2170	
L23	Ratio Det. Trans.	2.8Ω	.3Ω	9A2171	Tap .6Ω
L24	Horiz. Osc.	45Ω		9A2096	
L25	Width Coil	.5Ω		9A2183	
L26	Horiz. Lin.	5.5Ω		9A2172	Tap 1.6Ω
L27	AM Loop Ant.	.9Ω	.1Ω	9A2224	
L28	AM Osc. Coil	5.5Ω	.4Ω	9A2223	
L29	1st. AM IF	16Ω	17Ω	9A2108	
L30	2nd. AM IF	9Ω	9Ω	9A2042	

CORONADO MODELS
15TV2-9101A, 15TV2-9102A

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CORONADO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo Blo	.250A	16X147	16X146	313.250	357001	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	CORONADO PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	P-81	AC-AG-J	A-AG	W26B	A66U	33	O-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

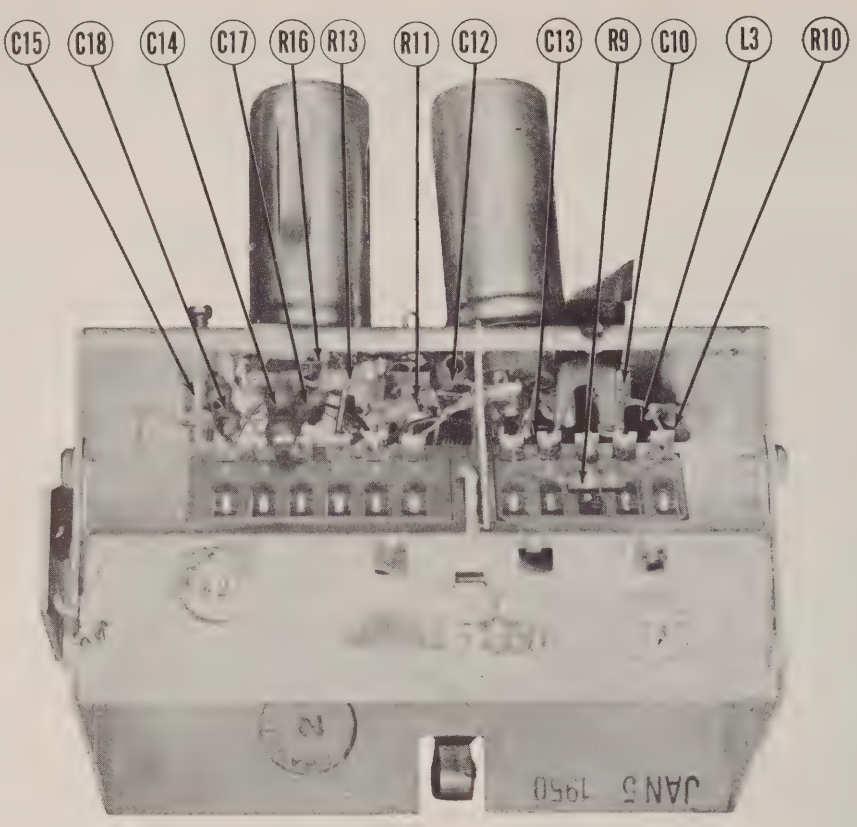
ITEM No.	REPLACEMENT DATA		REMARKS
	CORONADO PART No.	WALCO PART No.	
M3	85-35	W-30AGA	

DIAL LIGHTS

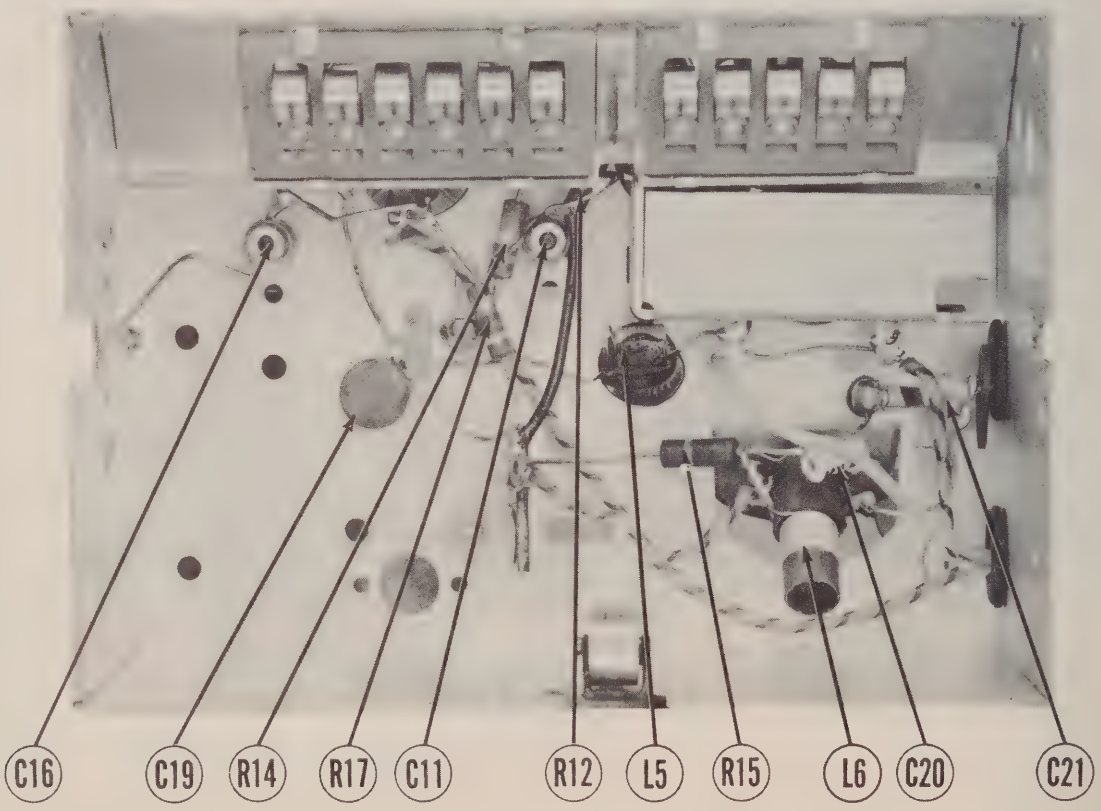
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CORONADO PART No.		
M4	Bayonet	7.5	.2	White	7A32		Type # 51
M5	Bayonet	6-8	.15	Brown	7A103		Type # 47

MISCELLANEOUS

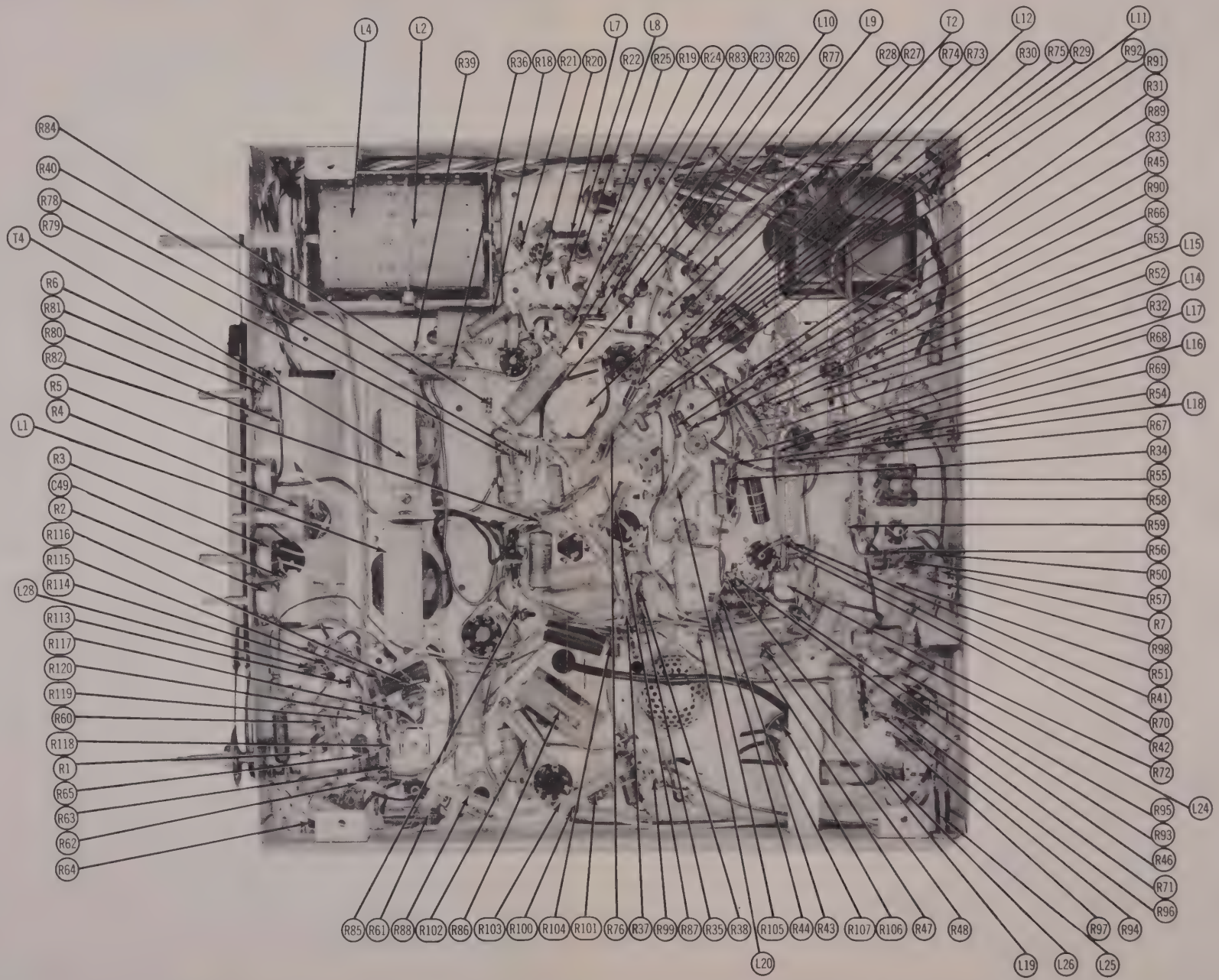
ITEM No.	PART NAME	CORONADO PART No.	NOTES
M6	RF Tuner	25A1087	
M7	Switch	2A418	Function (Phono-AM-TV)
M8	Focus Magnet	2A410	
M9	Ion Trap	2A407	
M10	Tuning Cap	14A216	For Am Radio (19-452MMF, 36 - 186MMF)
A33	Trimmer	17A235	2-24MMF Am Loop Ant.
	Knob	10A742	Fine Tuning
	Knob	10A741	Channel Selector (Mahogany Cabinet)
	Knob	10A752	Contrast
	Knob	10A794	Volume Off/On
	Knob	10A768	Fine Tuning
	Knob	10A769	Channel Selector (Oak Cabinet)
	Knob	10A770	Contrast
	Knob	10A800	Volume Off/On
	Ant. Coil	9A2120	Channel # 3
		9A2121	Channel # 4
		9A2122	Channel # 5
		9A2123	Channel # 6
		9A2124	Channel # 7
		9A2125	Channel # 8
		9A2126	Channel # 9
		9A2127	Channel # 10
		9A2128	Channel # 11
		9A2129	Channel # 12
		9A2130	Channel # 13
	RF, Mixer Grid and Osc.	9A2132	Channel # 3
		9A2133	Channel # 4
		9A2134	Channel # 5
		9A2135	Channel # 6
		9A2136	Channel # 7
		9A2137	Channel # 8
		9A2138	Channel # 9
		9A2139	Channel # 10
		9A2140	Channel # 11
		9A2141	Channel # 12
		9A2142	Channel # 13



RF TUNER-RIGHT SIDE

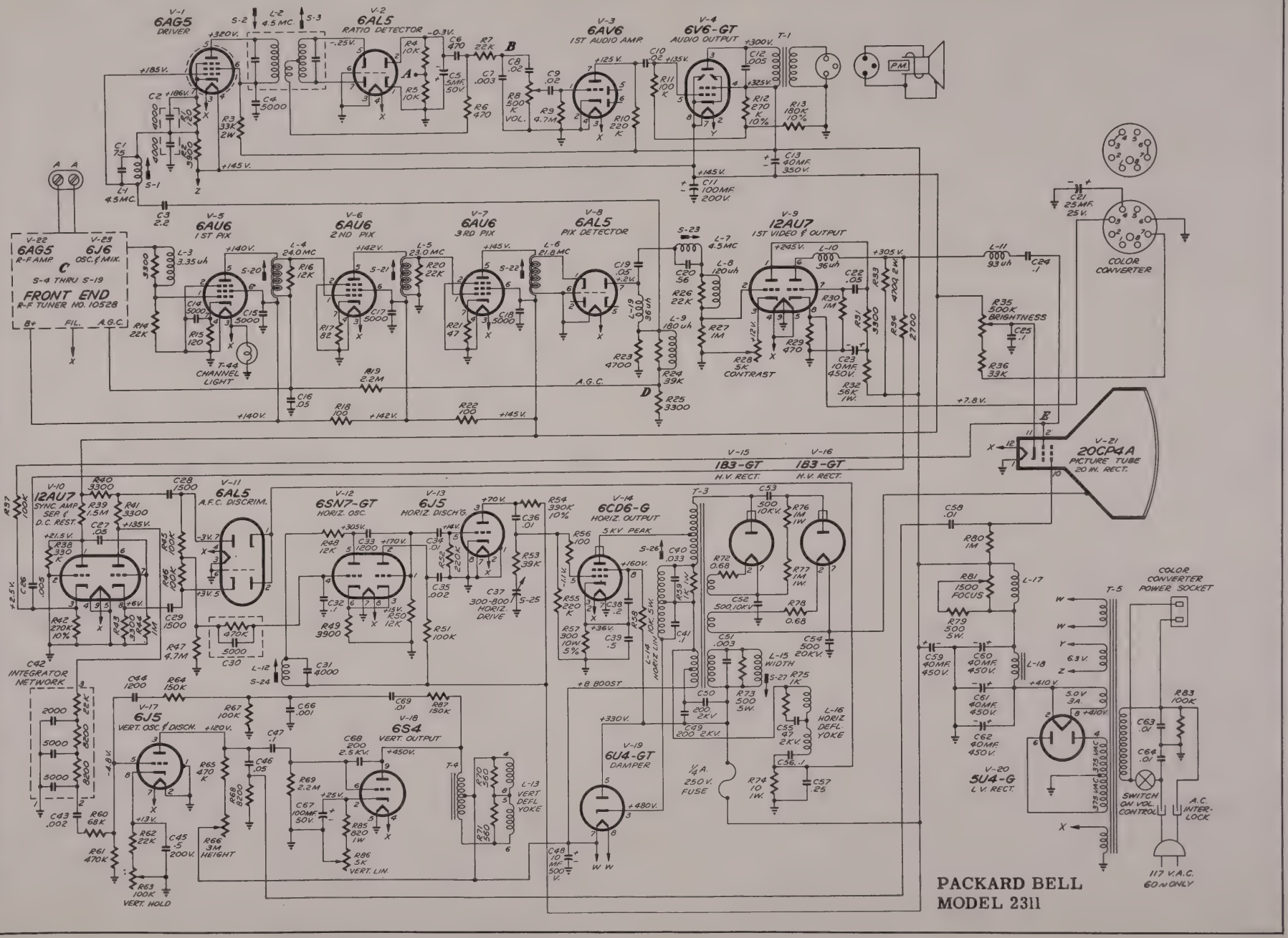


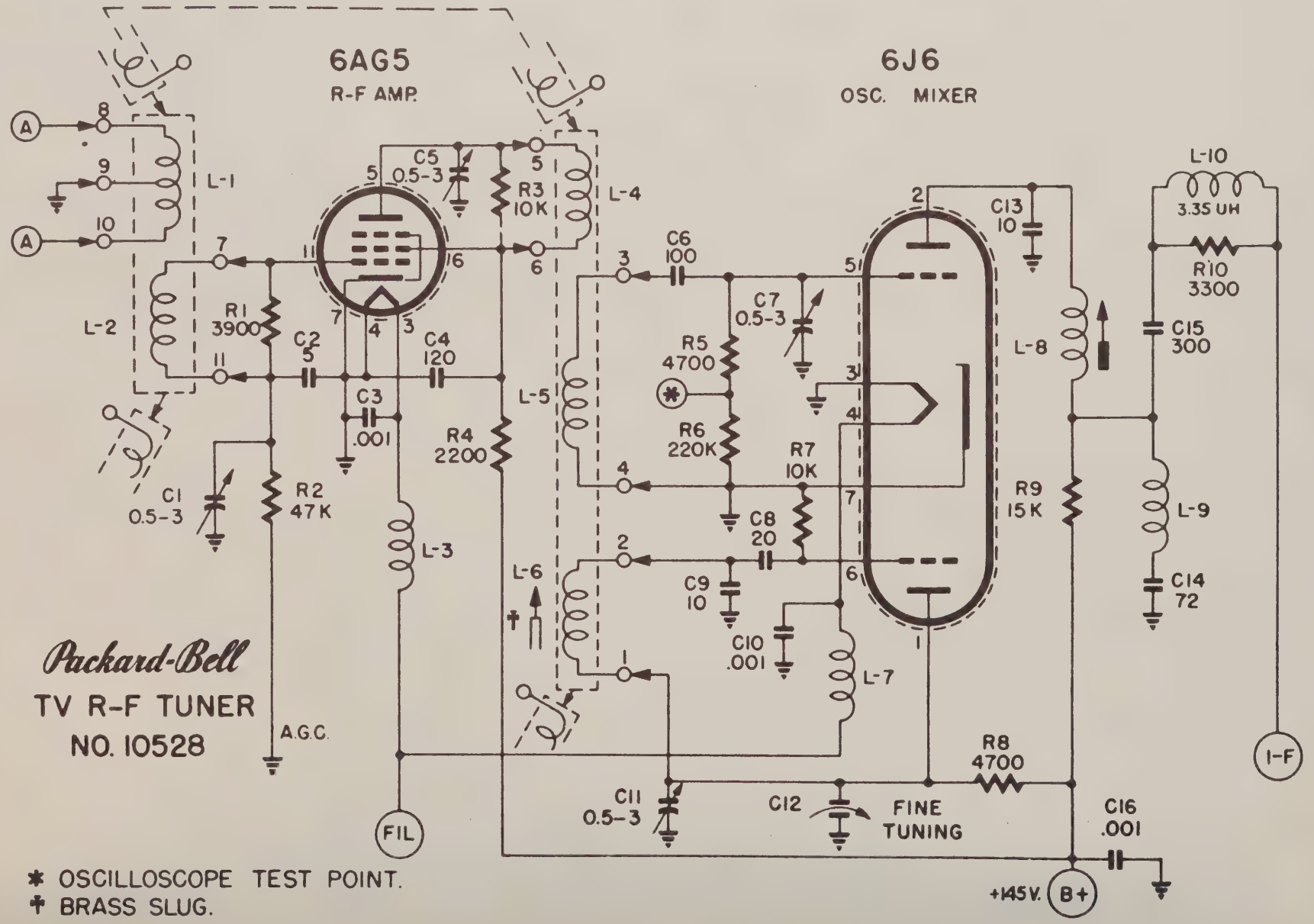
RF TUNER-BOTTOM VIEW



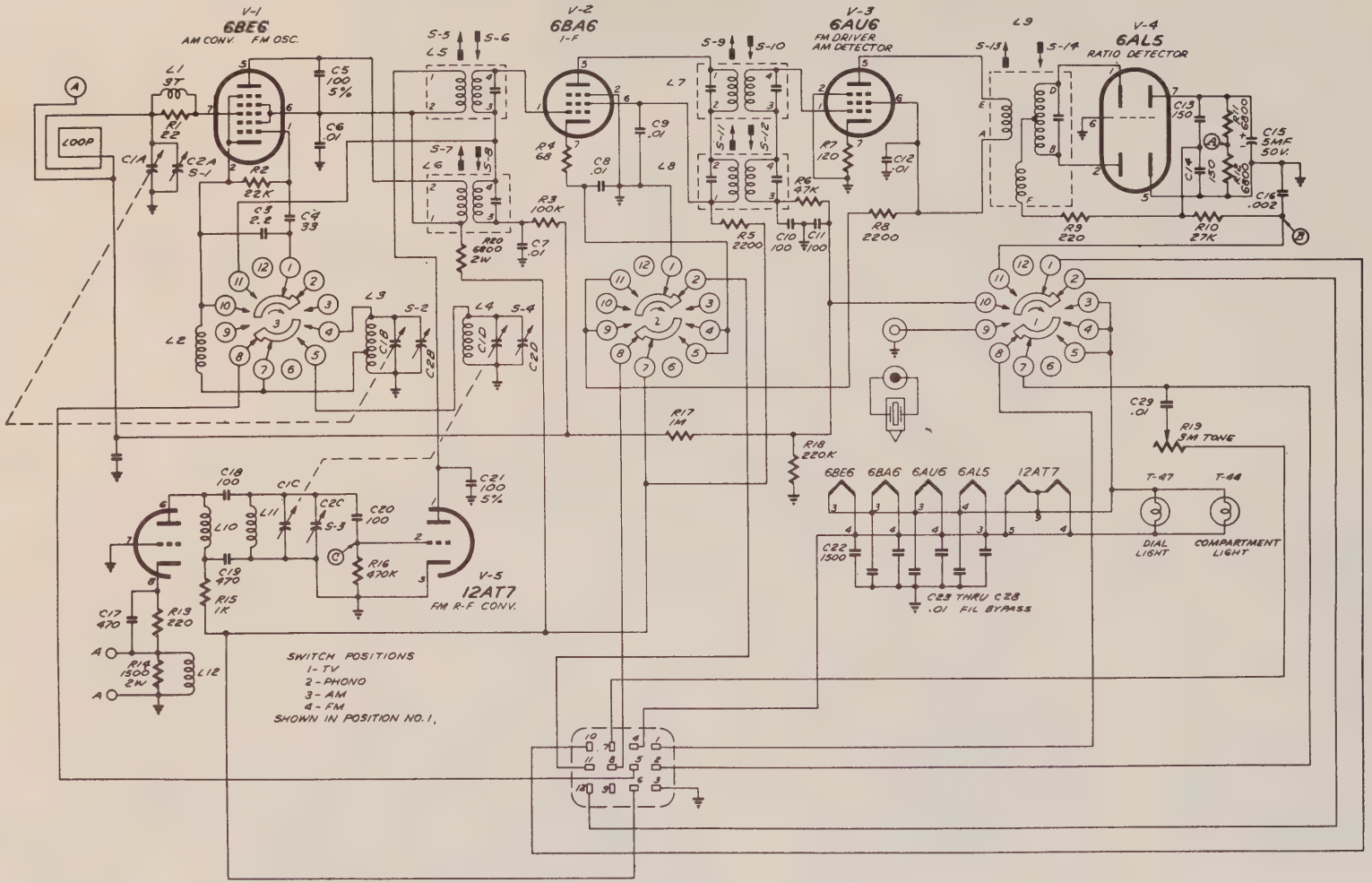
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.





TV TUNER USED IN MODELS 2311 AND 2811.



AM-FM TUNER USED IN MODEL 2811.

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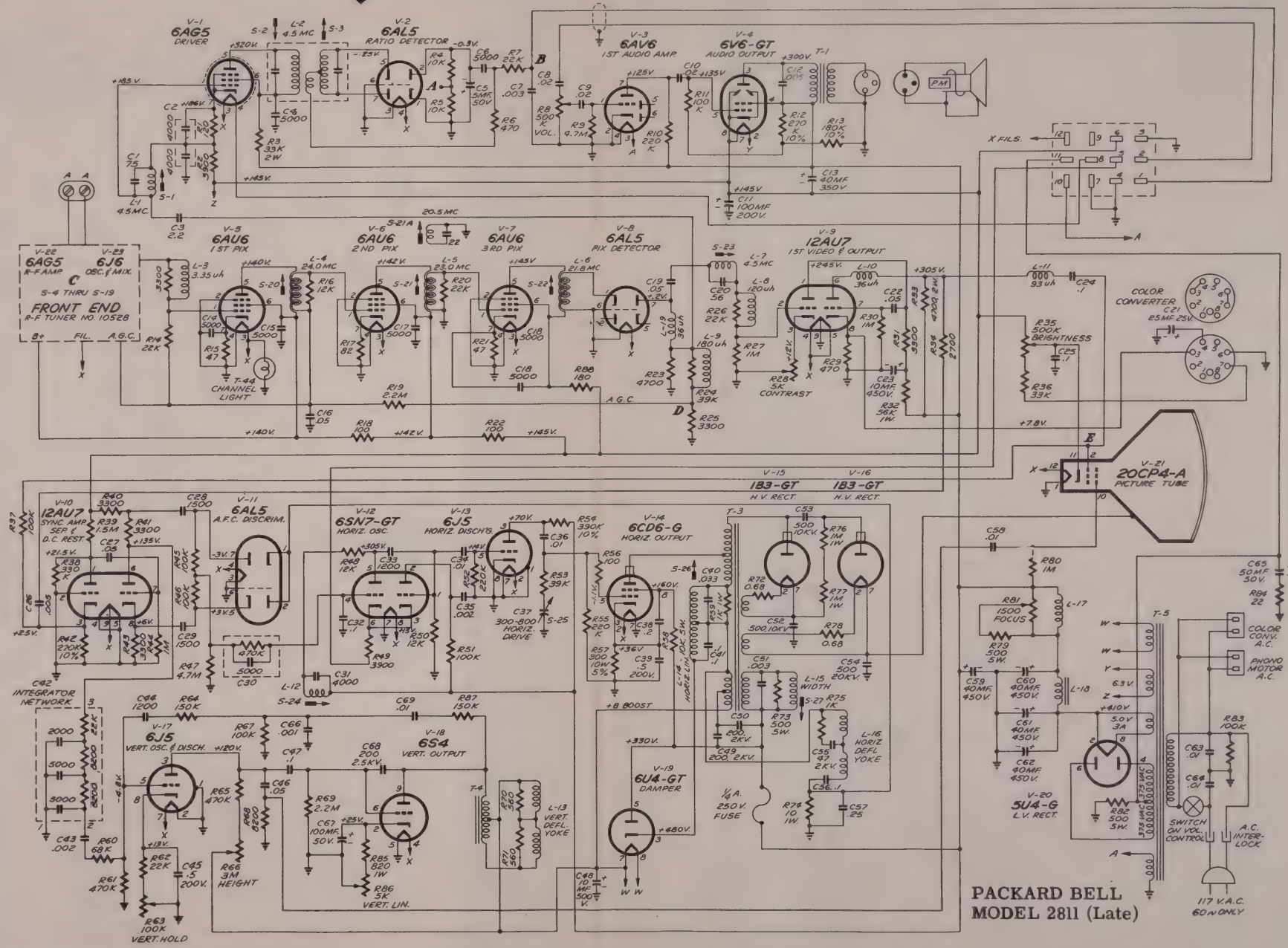

PRELIMINARY DATA
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SET 152 FOLDER 5 A

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EKOTAPE
MODELS 109, 110, 111, 112

EKOTAPE
MODELS 109, 110, 111, 112

GENERAL INFORMATION

The Webster Electric Ekotape Recorder Models 109, 110, 111, and 112 are designed to magnetically record and play back a recording on a standard 5" or 7" reel of recording tape.

Models 109 and 111 are designed to record two tracks of sound. This allows two one-hour programs to be recorded on the Model 109, using 7" reels, and two half-hour programs on Model 111, using 7" reels.

The mechanical units incorporate a single control which operates the following functions: "Rewind-Stop-Forward" and "Fast-Forward." There are three amplifier controls: Volume control for recording and playback; Play-and-Record selector control, and the On-Off-Tone control.

In the "Fast-Forward" position, the maximum speed is approximately twenty times the normal speed for Model 109, and ten times the normal playing speed for Model 111.

Recordings may be made from the Microphone, or the radio and record player, by using a cord attachment.

Manufactured by:

Webster Electric Company
Racine, Wisconsin

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DESCRIPTION OF MODELS

The Ekotape Models 109, 110, 111 and 112, described in this manual, are all of the same basic design and construction. All are portable models and include the same accessories. Model 109 is the basic unit; all other models have slight variations and are described in the following paragraphs:

Model 109 (Serial No. 5203 and up) operates on 117 volts, 60 cycles. Tape speed is 3-3/4" per second. The tube complement consists of the following five tubes.

Rectifier	5Y3GT
Input (playback only)	5879
Amplifier	12AX7
Output	6V6GT
Oscillator	6V6GT

Model 109 (units only), with serial numbers up to 5202, has a different tube complement, as follows:

Rectifier	5Y3GT
Input (playback only)	6AU6
Amplifier	12AT7
Output	6V6GT
Oscillator	6V6GT

Model 110 operates on 115/230 volts, 50 cycles. Tape speed is 3-3/4" per second. The amplifier is the same as Model 109, except a larger power transformer is used which incorporates a tapped primary for selection of 115 or 230-volt operation. Units are shipped connected for 115-volt operation. For 230-volt operation, it is necessary to move one wire in the amplifier (see paragraph on "Changing from 115 Volts to 230 Volts"). The motor pulley is larger and the flywheel tire is smaller on this model.

Model 111 operates on 117 volts at 60 cycles per second. Tape speed is 7-1/2" per second. Mechanically, this model is the same as Model 109, except the motor pulley-to-flywheel tire ratio has been changed to provide faster tape speed. The amplifier has some differences from Model 109 to accommodate for the increased tape speed.

Model 112 operates on 115/230 volts at 50 cycles per second. The amplifier is the same as Model 111, except a larger power transformer is used which incorporates a tapped primary for selection of 115 or 230-volt operation. Units are shipped connected for 115-volt operation. For 230-volt operation, it is necessary to move one wire in the amplifier (see paragraph on "Changing from 115 Volts to 230 Volts").

OPERATING INSTRUCTIONS

Preparing the Ekotape for Recordings -

1. Remove the lid cover from the carrying case.

2. Insert the power cord into a convenient receptacle of the proper rating.

3. Make sure the control handle (7) is in the "Off" position.

4. Place a full reel of tape on the left-hand spindle, supply spindle (5), in a manner so that the tape will unwind in a clockwise direction.

NOTE: Make sure the magnetic coating of the tape faces the center of the reel.

5. Place an empty reel on the right-hand spindle, takeup spindle (8).

NOTE: When placing the reels on the spindles, be sure that the slots in the reel engage the keys on the spindles.

6. Thread the tape as shown in Figure 2. The solid line is the position tape is to be threaded for recording and playback. When the tape is threaded on the empty reel, turn the reel four or five revolutions, clockwise, to make sure that the tape is firmly fastened and to take out all the slack in the tape.

Making a Recording -

1. After the recording tape has been properly threaded, turn the "On-Off-Tone" control to the "On" position.

2. Turn the control handle (7) to the "Forward" setting.

3. Turn the Record-Play-Selector knob to the "Record" position.

NOTE: The Selector knob will stay in the "Record" position only, when the control handle (7) is in the "Forward" setting.

When the control handle is turned to any other setting, the selector automatically returns to the "Play" position. This is a safety feature which prevents the erasing of a recording if the control handle is turned to "Rewind" or "Fast-Forward."

4. Turn the "Volume" control clockwise until the incoming signal causes the "Record Lever Indicator" to flash on high peaks only. A recording is now being made on the tape.

To Record from Microphone -

1. Insert the Microphone plug into the "Mic" jack located on the side of the case.

2. When recording from Microphone, follow the instructions under the heading "Making a Recording." All sounds picked up by the Microphone will be recorded on the tape. Also, do not hold the Microphone too close to your face as breathing will be recorded.

NOTE: When recording with the Microphone, it is suggested that the Ekotape speaker be silenced to prevent feedback. The Ekotape speaker can be silenced by pushing the speaker switch, located on the recessed plate in the side of the case, to the "Off" position.

To Record from Radio -

1. If a recording from a radio is desired without the use of the Microphone, it is recommended that the

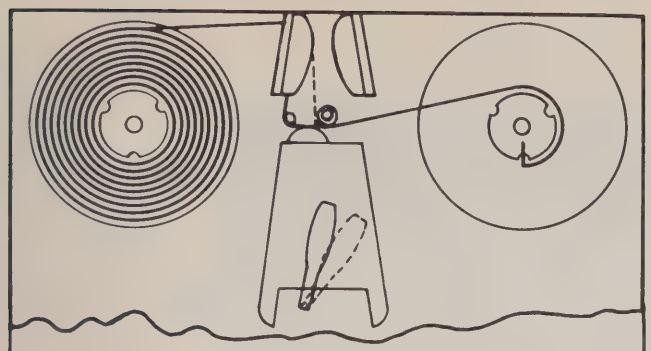


Figure 2

THREADING OF TAPE

Solid line indicates position of tape for "Record" and "Playback." Dotted section shows how tape is to be threaded for "Rewind" and "Fast-Forward."

radio, or external speaker cord attachment, be connected to the speaker voice coil by means of the alligator clips, and the other end of the cord plugged into the "Radio-Phono" jack located on the left side of the case. It is also possible to make a connection across the detector load. This kind of connection may be more desirable, because any circuit deficiencies in the amplifier of the radio will not be included in the recording.

2. Set the radio for soft playing; then adjust the controls on the Ekotape, as described under "Making a Recording."

NOTE: In the event that a hum should develop during recording, reverse the connections to the speaker or detector.

To Record from Phonograph -

1. To record from a phonograph, connect the alligator clips of the radio, or external speaker cord attachment, to the ends of the pickup leads of the phonograph; then plug the other end of the attachment into the "Radio Phono" jack.

2. To make a recording from a phonograph, or from a "Radio-Phonograph" combination, connect the alligator clips across the voice coil on the speaker, turn the radio on, and then turn the radio-phono selector switch to "Phono." Set the radio for soft playing, and then adjust the controls on the Ekotape, as described under "Making a Recording."

NOTE: If hum develops during recording, switch alligator clip connections.

To Rewind -

1. To rewind a reel of tape for playback, turn the control handle (7) to "Rewind." It is suggested to stop the "Rewind" operation before all the tape is unwound from the takeup spool. By doing this, there is a saving in the operation of rethreading the tape.

(a) Thread tape on recorder as shown in figure 2, by the dotted line.

Twin Track Operation -

The Ekotape Models 109 and 111 are designed to record two tracks of recording on a standard width tape instead of one which doubles the recording time of a reel of tape. By using this twin-track operation, two full one-hour programs on a 7" reel, with the Model 109, or two half-hour programs on a 7" reel on Model 111, may be recorded:

1. When a full reel of tape has been recorded, that is, on Models 109 and 111, stop the recorder by turning the control handle (7) to "Stop."

2. Remove the empty reel from the supply spindle.

3. Remove the full reel of tape from the takeup spindle, turn it over, and place it on the supply spindle (5).

4. Place the empty reel of tape on the takeup spindle; thread the tape as shown in Figure (2), and then continue your recording, as described under "Making a Recording."

To Play a Recording -

1. With tape properly threaded, turn the control handle (7) to the "Forward" position.

2. Adjust the "Volume" and "Tone" controls to suit.

3. Be sure the external speaker switch, located on the right side of the case, is turned to the "On" position.

NOTE: In case both tracks of recording have been used, it will be necessary to reverse the reels, as described in Steps 2, 3, and 4 under "Twin Track Operation."

Fast-Forward -

1. If any portion of the tape is to be skipped, it may be done by turning the control handle (7) to "Fast Forward." The tape will now wind at a fast speed until the control handle is turned to "Forward" or to the "Off" position.

Using an External Speaker -

1. Connect the alligator clips of the external speaker cord attachment to the voice coil of the external speaker; then plug the other end of the cord attachment into the "External Speaker" jack, located on the right side of the case.

2. Be sure the "On-Off" speaker switch is in the "On" position.

NOTE: When the speaker attachment cord is plugged into the "External Speaker" jack, the Ekotape speaker is automatically cut out.

To Operate the Ekotape as a P.A. System -

1. Insert the Microphone cord into the "Mic" jack.

2. Turn the "Off-Tone" control on.

3. Remove the reels from the recorder.

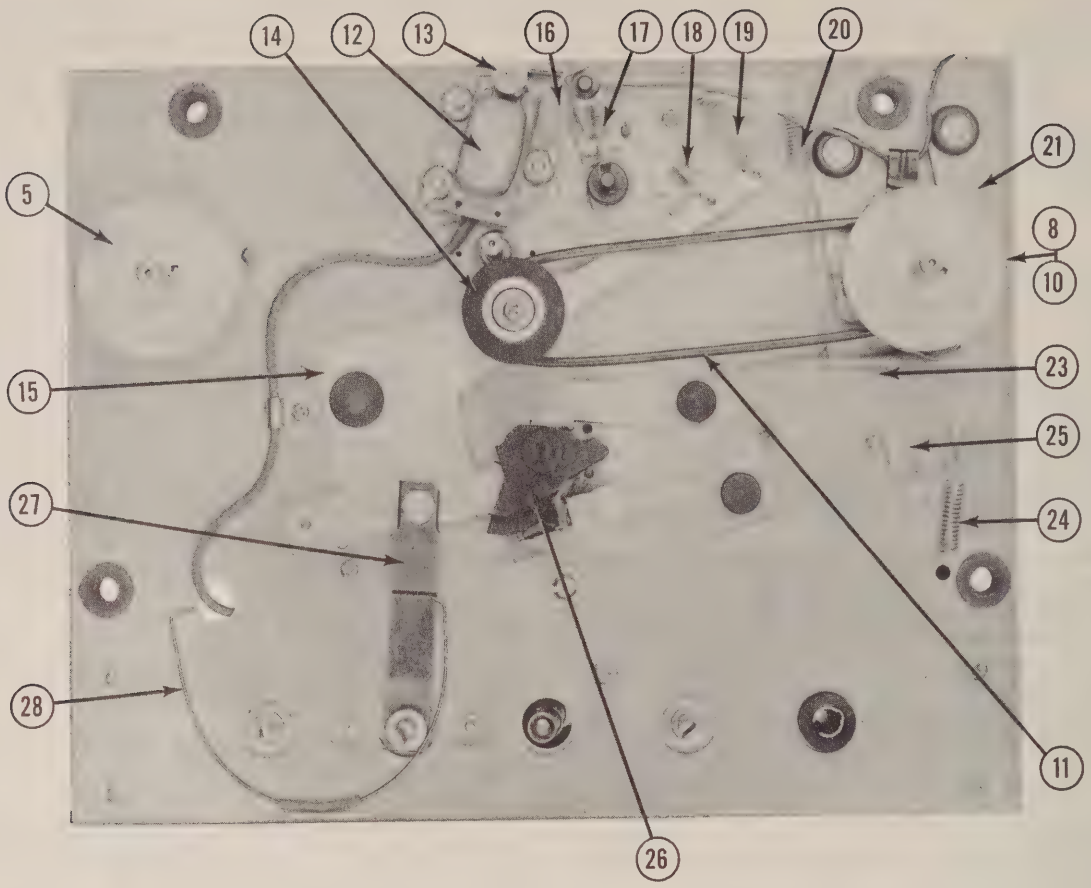


Figure 3

4. Turn the control handle (7) to "Forward."

5. Turn the "Play-Record" Selector knob to "Record."

6. "On-Off" speaker switch should be in the "On" position.

7. Speak into the Microphone and adjust the "Volume" control to suit.

NOTE: Do not place the Microphone close to the speaker when "Volume" is turned up, as a loud shrill will develop.

Changing from 115 Volts to 230 Volts -

Models 110 and 112 have a power transformer tapped for 115 or 230-volt operation. Both models are shipped connected for 115-volt operation. To change from to 230-volt operation, change one connection in the amplifier, as follows: The black wire coming from the fuse holder is connected to a lug on a terminal strip in the chassis. This lug is connected to a blue wire coming from the power transformer. This is the 115-volt connection. There is another lug on the terminal strip which is connected by a red wire to the power transformer. For 230-volt operation, remove the black wire from the lug with the blue transformer wire, and resolder it on the lug with the red transformer wire.

After changing to 230-volt operation, mark the nameplate in the cover of the carrying case for future reference when servicing is required.

Removing the Top Plate (9) -

In order to gain access to the operating mechanism, the top plate (9) must be removed:

1. Remove the four Phillips mounting screws which fasten the recorder to the carrying case.

2. Remove the fuse holder cover, and pull off the Volume and Tone control knobs.

3. Loosen the set screw in the Selector knob and control handle (7), and remove.

4. Remove the head cover plate (6).

5. Raise the recorder unit enough so as to remove the input jack connection and speaker plug connection to the amplifier chassis; then remove the unit from the case.

6. The top plate (9) is rubber mounted on the mechanism mounting plate (22) and held in place by four screws and large washers installed from the back of the chassis. To remove the top plate, pivot the pressure pad assembly (16) so as to clear the hole in the baseplate. While holding it in this position, carefully work the top plate off the rubber mounts.

To re-assemble, reverse the above procedure.

Replacing Forward Takeup Belt (11) -

The "Fast-Forward" (34) and "Rewind" spindle belt (35) can be replaced without disassembly other than

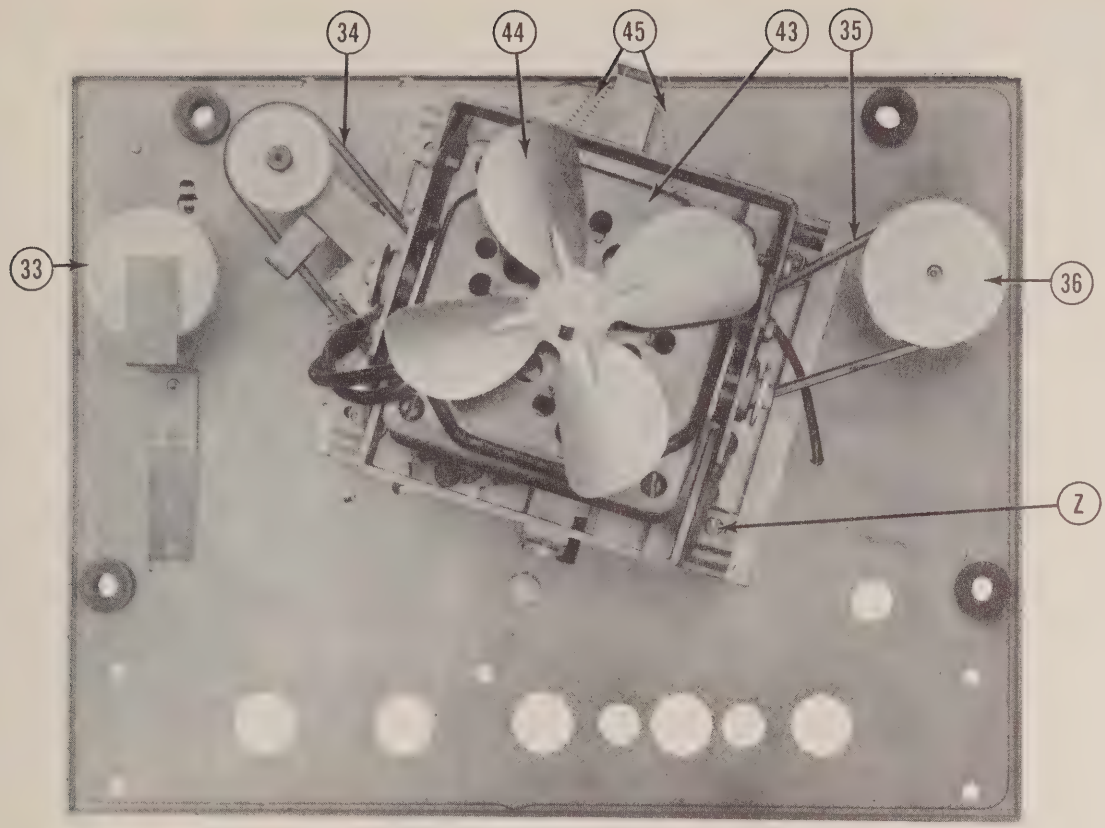


Figure 4

removing chassis from the carrying case. Use care in handling the drive belts to prevent distortion or contact with grease or oil. Be sure there is no grease or oil on pulleys.

The "Forward" takeup belt (11) is located under the top plate; therefore, the chassis must be removed the carrying case and the top plate (9) removed (See "Removing the Top Plate"). After the top plate has been removed, loosen the set screw in the "Fast-Forward" pulley (33); then remove reel shaft (8). Remove pulley assembly (10) and work belt over the pinch roller (14).

Work new belt over pinch roller. Place the belt in the groove of the pulley assembly (10) and replace the pulley (10), reel shaft (8), and "Fast-Forward" pulley (33). With the mechanism in the "Forward" position, press down lightly on the reel shaft and tighten the set screw in the "Fast-Forward" pulley (33), leaving a clearance of .010 to .015 inch between the pulley (33) and bearing.

Motor Adjustment -

The drive clearnace of the motor must be carefully adjusted so the mechanism will function properly in all control knob positions.

With all springs attached, make the following adjustments:

1. "Fast-Forward" position: The "Fast-Forward" drive belt (34) should engage the motor pulley (42) and the "Fast-Forward" pulley (33), with the kick-out lever (46) clear of the "Fast-Forward" and pulley assembly (47). The trip pin (X) on the "Fast-Forward" drive mechanism should engage the brake trip of the trip assembly (52), passing beyond the dog (Y) of the brake trip, not exceeding 1/16 inch (See Figure 5). This prevents overrun or looping of the tape in going from "Fast-Forward" to "Forward,"

To correct any misalignment of above, loosen the four mounting screws (Z), see Figure 4, and with all springs attached and mechanism in "Fast-Forward" position, make adjustments by shifting the motor bracket in the slotted mounting holes. After the proper adjustment is made, tighten the four screws.

NOTE: Check the "Fast-Forward" brake spring (52) to see that a clearance of approximately 3/64 inch exists between the brake spring (51) and "Rewind" belt (35) in the "Fast-Forward" and "Forward" positions.

2. In the "Stop" position, the motor drive pulley (42) should not touch any part.

3. In the "Rewind" position, the motor pulley should engage the "Rewind" belt. If an adjustment is necessary, it can be made by slightly bending the rocker arm bracket.

4. In the "Forward" position, the motor pulley should engage the flywheel tire only. Adjustment is made by moving the motor bracket in the slotted mounting holes.

Record Lock Arm Adjustment -

The record lock arm (27) locks the "Selector" knob in the "Record" position only when the control handle (7) is turned to "Forward." The lock arm automatically returns the "Selector" knob to the "Play" position when the control handle is turned to any other location. This is accomplished by the movement of the

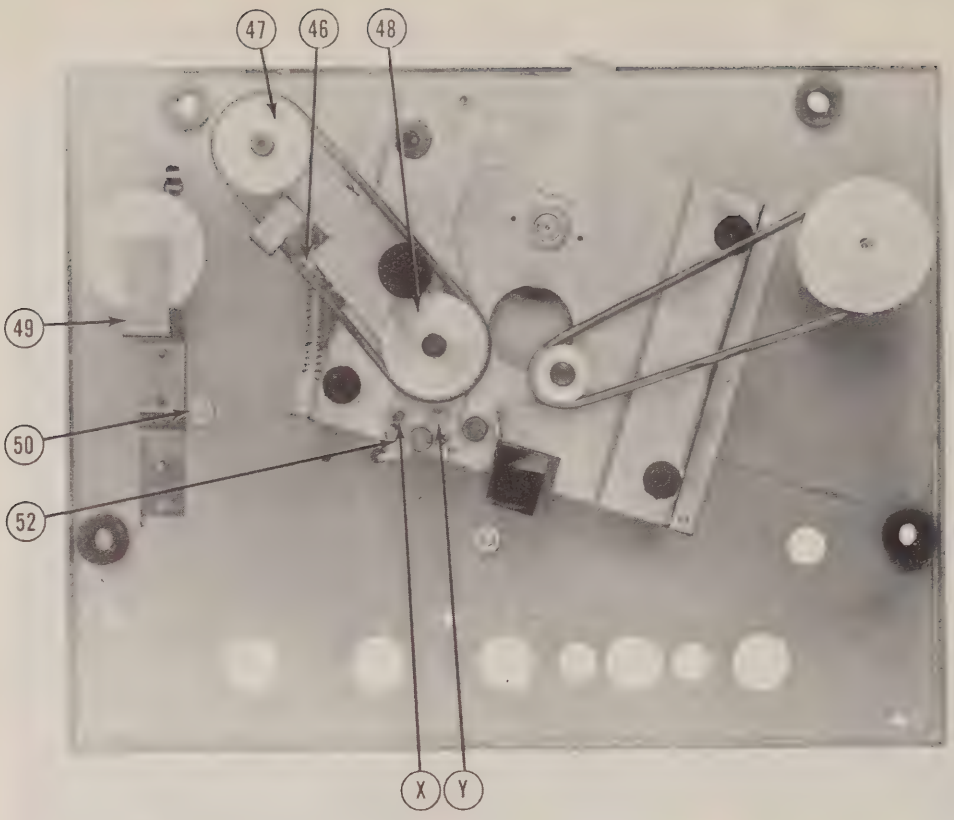


Figure 5

pinch roller lever (15), which is actuated by the control handle (7), causing the index ball bearing to slip out of the detent of the roller lever (15). The spring (28) then automatically pivots the lock arm (27) and "Selector" knob to "Play." This is a safety feature to prevent a recording from being erased:

1. To adjust the lock arm, set the control knob (7) at "Forward."

2. Remove the spring (28) from the lock arm.

3. Loosen the set screws holding the lock arm (27) to the "Selector" shaft.

4. Turn the "Selector" shaft to its extreme counterclockwise position.

5. Move the lock arm (27) so that the index will engage the index hole in the pinch roller lever and shaft assembly (15); then move the lock arm approximately 1/16 inch farther counterclockwise, and tighten the set screws.

6. Replace the spring (28).

TROUBLES AND REMEDIES

Motor and Amplifier do not Operate when Tone Control Switch is Turned On -

1. Check fuse (M1) to see if it has blown. Fuse is locked in a fuse holder in the right-hand side of the top plate (See Figure 1).

2. Check to see if power is reaching recorder.

3. Damaged power cord:

(a) Repair or replace.

4. Damaged "On-Off-Tone" control switch:

(a) Replace tone control and switch assembly.

Recorded Sound is Faint, Fuzzy, Distorted or No Sound at all -

1. Dirty head:

(a) Check the recording head (12) to see if it is dirty. The recording head is subject to an accumulation of tape coating residue, which is worn off as the tape passes. This must be periodically removed since it may cause a faint recording. The accumulation may be removed with carbon tetrachloride and a small cotton swab on the end of a tooth pick.

2. Pressure pad spring (17) loose or missing:

(a) The pressure pad lever assembly (16) should apply pressure against the tape, thus holding the tape tightly against the recording head. If this is not true, check the pressure pad spring (17); if loose or missing, replace.

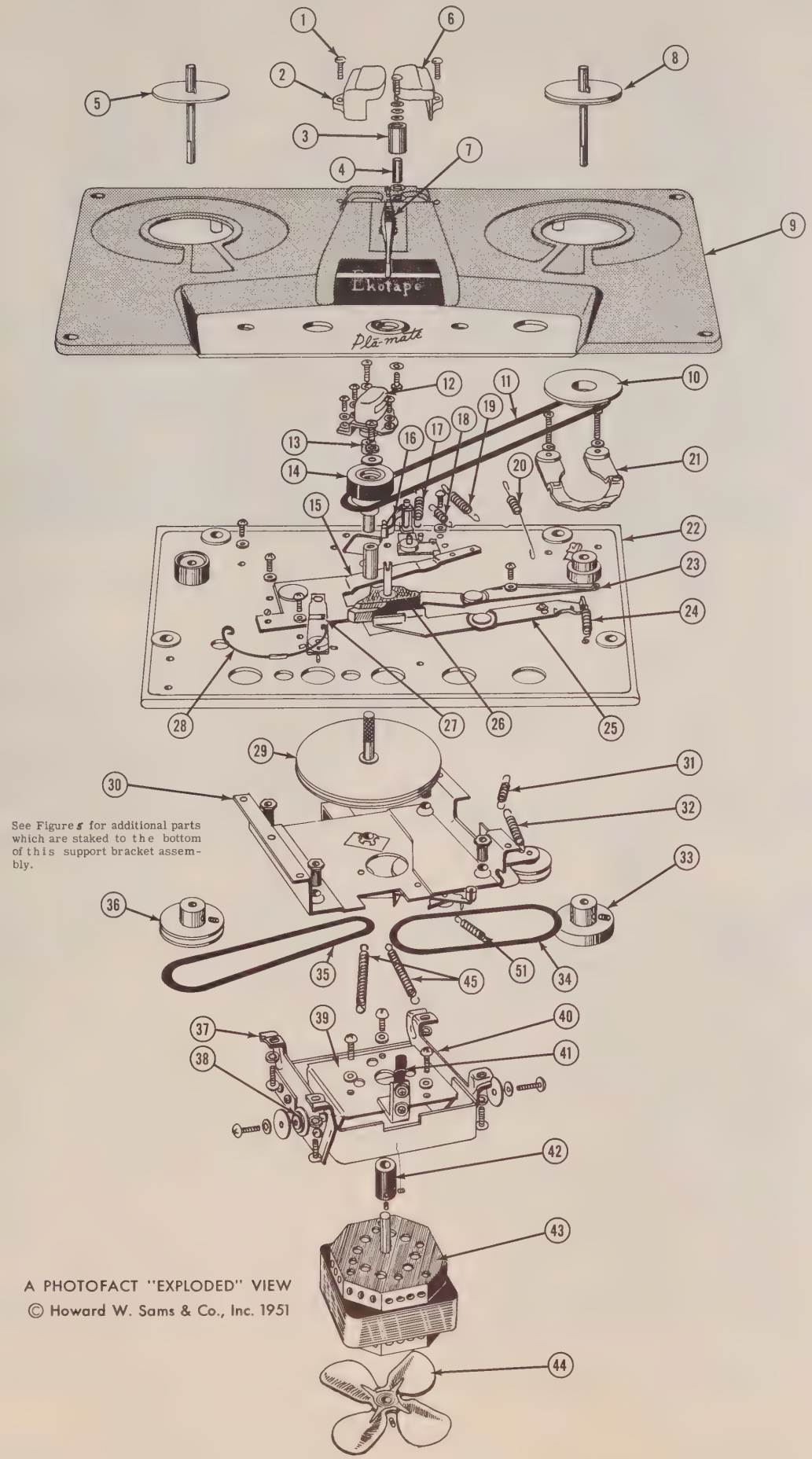
3. Worn or dirty pressure pad:

(a) Replace or clean pressure pad assembly (16).

4. Amplifier trouble.

5. Over-recorded or under-recorded tape:

(a) Correct recording volume is very important.



See Figure 5 for additional parts which are staked to the bottom of this support bracket assembly.

A PHOTOFACT "EXPLODED" VIEW

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Too weak a signal, which does not cause the indicator to flicker, will result in weak playback. Too strong a signal, causing the indicator to glow continuously, will result in distortion during playback.

Failure of Tape Erasing -

1. Check to see if the head assembly (12) is properly aligned:

(a) If the head assembly (12) is loose, or if the head assembly has been replaced, it will be necessary to align if for optimum output level and maximum high frequency response. If a constant frequency response tape is not available, play back a tape previously recorded; then adjust the three recording head mounting screws for maximum high frequency response.

2. Dirty head:

(a) Clean with carbon tetrachloride.

3. Pressure pad spring loose:

(a) Replace

4. Pressure pads worn:

(a) Replace.

5. Oscillator coil assembly or tube not operating:

(a) Replace oscillator coil (L2) or tube (V3).

6. Defective erase coil in head:

(a) Replace head (12). To gain access to the head assembly (12), see paragraphs on "Removing the Top Plate" and "Failure of Tape Erasing, 1-(a)."

Failure to Record -

1. Record coil open:

(a) Replace record head unit (12).

2. Insufficient bias voltage:

(a) Check bias voltage across record head with AC vacuum tube voltmeter. There should be approximately 100 volts; if low, check bias oscillator circuit.

3. Pressure pad assembly (16) not holding tape against lamination on the recording head:

(a) Pressure pads worn; replace.

(b) Pressure pad spring (17) loose; replace.

4. Recording head loose:

(a) Play back a recording that is known to be good, and adjust the head as described under "Failure of Tape Erasing, 1-(a)."

Will Not Play Back -

1. Open coil in head:

(a) Replace recording head.

2. Pressure pad assembly (16) not functioning properly:

(a) Pressure pad spring (17) loose; replace.

(b) Pressure pad felts worn; replace.

3. Dirty recording head:

(a) Clean with carbon tetrachloride.

Takeup Reel (8) does not take up Tape on Play Position -

1. Broken or defective takeup drive belt (11):

(a) Replace.

2. Pinch roller spring (19) not fastened:

(a) If this spring is loose, the pinch roller lever (15) will not be actuated, thereby preventing the pinch roller (14) from contacting the flywheel capstan and, in turn, not driving the takeup spindle (8).

3. Motor springs (45) not connected:

(a) Replace.

Fast-Forward does not Operate -

1. "Fast-Forward" mechanism spring (32) loose or broken:

(a) If this spring is not connected, the "Fast-Forward" pulley and arm assembly (47) will not engage the pulley (33); replace the spring.

2. "Fast-Forward" belt (34) defective or broken:

(a) Replace belt (34).

3. "Fast-Forward" pulley (33) loose on shaft:

(a) Tighten set screw in pulley (33).

4. Motor out of adjustment:

(a) See "Motor Adjustment."

Tape Overruns from Rewind to Stop -

1. Brake lever spring (20) loose or broken:

(a) Replace brake lever spring (20).

2. Takeup pulley (33) and spindle shaft (8) out of adjustment:

(a) See "Takeup Pulley and Shaft Adjustment."

3. Pads on brake yoke (21) worn or missing:

(a) Replace brake pads.

"Wows" Caused by Tape Slipping -

1. Worn or damaged pinch roller (14):

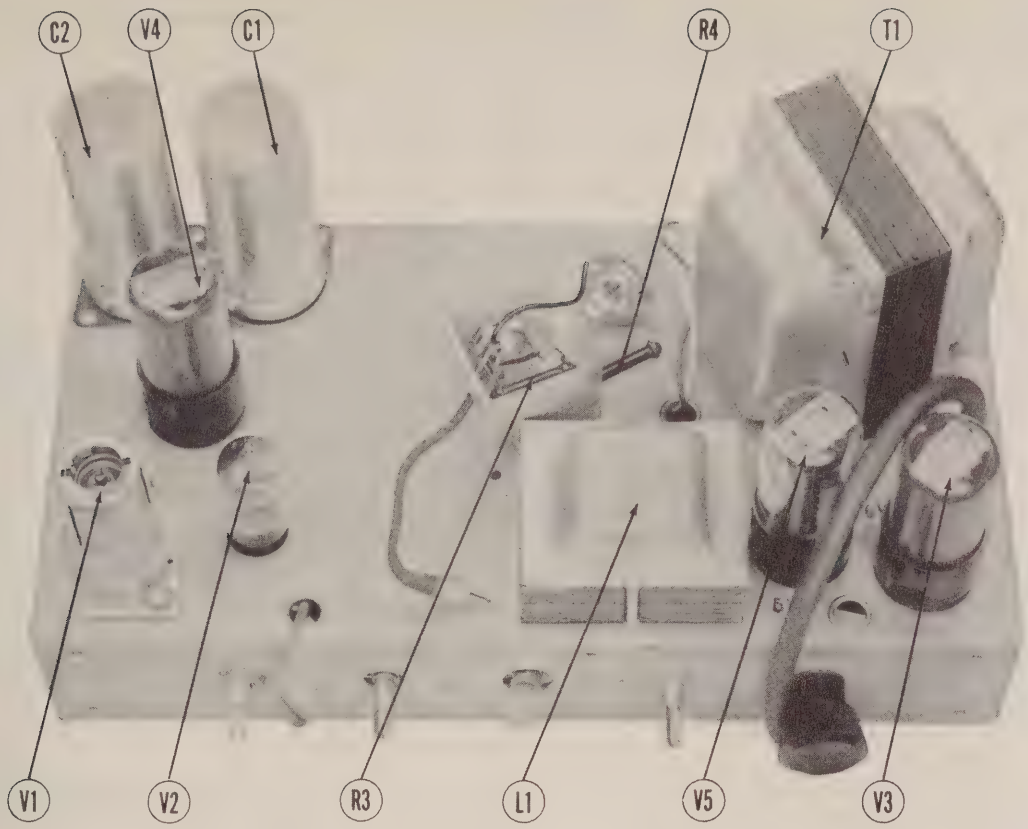


Figure 6

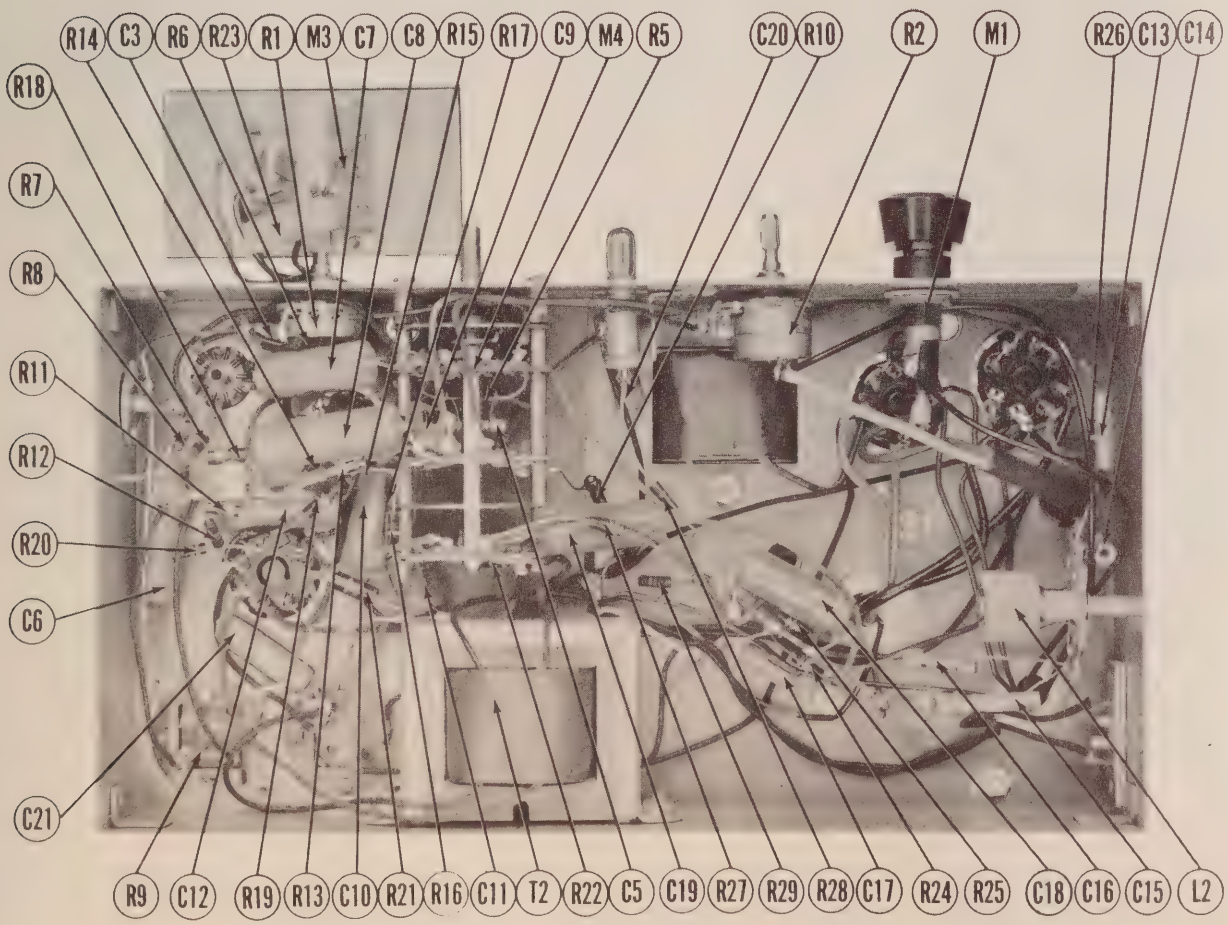
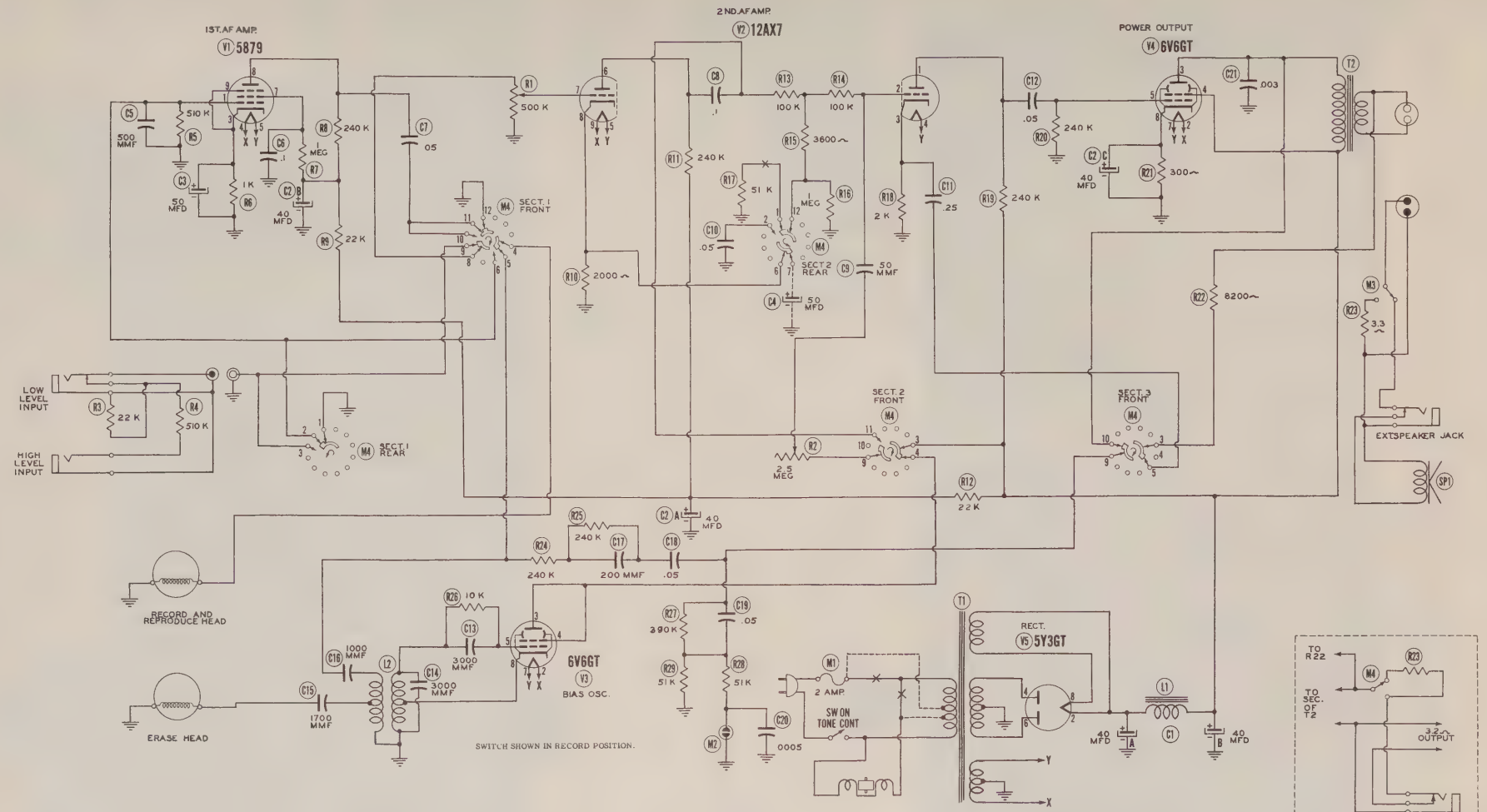


Figure 7



▲ TAKEN IN PLAY POSITION
TAKEN IN RECORD POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	5879	▲-.1VDC #0V	0VDC	1VDC	¶	¶	0V	▲30VDC #25VDC	▲45VDC #38VDC	1VDC
V 2	12AX7	▲135VDC #125VDC	0V	▲1.2VDC #1VDC	¶	¶	▲110VDC #100VDC	0V	1VDC	¶
V 3	6V6GT	0V	¶	▲0V #255VDC	▲0V #255VDC	▲0V #-70VDC	▲0V #-70VDC	¶	▲0V #.2VDC	
V 4	6V6GT	0V	¶	▲255VDC #240VDC	▲275VDC #255VDC	0V	▲275VDC #255VDC	¶	▲3VDC #2.8VDC	
V 5	5Y3GT	0V	▲300VDC #285VDC	0V	275VAC	0V	275VAC	0V	▲300VDC #285VDC	

¶ 6.3VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	5879	▲510KΩ #0Ω	Inf.	1KΩ	.1Ω	.1Ω	Inf.	†1 Meg.	†285KΩ	1KΩ
V 2	12AX7	†240KΩ	▲1.1 Meg. #155KΩ	2KΩ	.1Ω	.1Ω	†260KΩ	0Ω	2KΩ	.1Ω
V 3	6V6GT	0Ω	.1Ω	▲ Inf. #†430Ω	▲Inf. #†430Ω	10KΩ	10KΩ	.1Ω	7.5Ω	
V 4	6V6GT	0Ω	.1Ω	†880Ω	†430Ω	240KΩ	†430Ω	.1Ω	300Ω	
V 5	5Y3GT	Inf.	80KΩ	Inf.	160Ω	Inf.	160Ω	Inf.	80KΩ	

† MEASURED FROM PIN 2 OF V5

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(a) Replace pinch roller (14).

2. Pinch roller spring (19) too weak:

(a) Replace spring (19).

3. Motor out of adjustment:

(a) See "Motor Adjustment."

LUBRICATION

This recorder was lubricated at time of manufacture, which should last for a long period of time under normal conditions; however, due to excessive use, or where it is subjected to extreme heat, dust, lint, etc., or when the unit is disassembled for repair, the recorder should be thoroughly cleaned with carbon tetrachloride and lubricated as follows:

Use light machine oil on oilite bearings of the motor, flywheel, shaft, and spindles.

Use Lubriplate on all frictional moving parts.

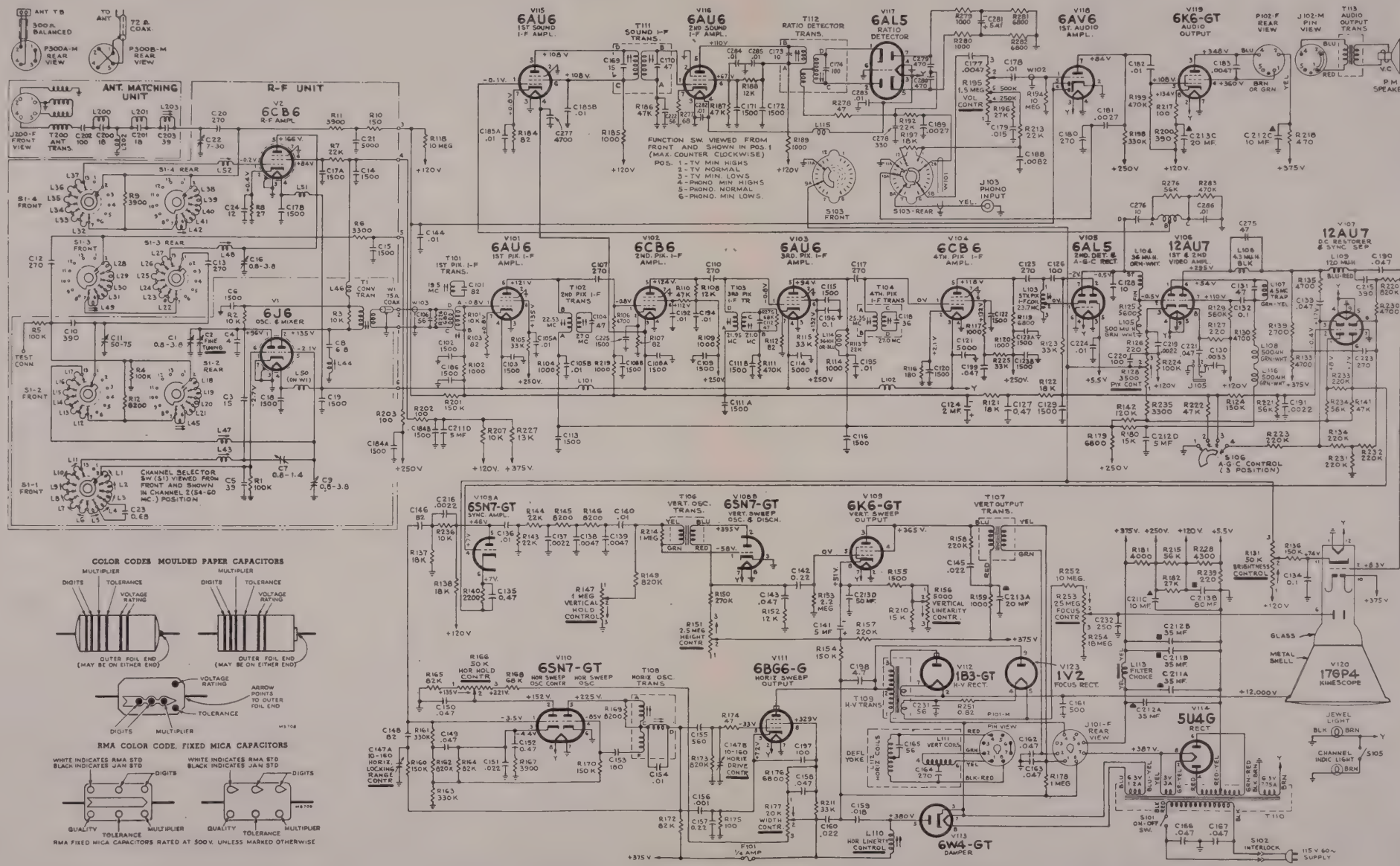
CAUTION: Do not overlubricate. Do not allow any grease or oil to come in contact with any of the drive surfaces, such as the rubber drive belts, capstan, pinch roller, motor pulley, etc. If grease or oil should come in contact with any of these surfaces, clean them with carbon tetrachloride.

MECHANICAL PARTS LIST

Ref No.	Part No.	Description
1	29528-5	Cover Screw, 4-40 x 3/8" Phillips Head
2	241-14062-3	Record Head Cover - Left
3		Tape Roller
4		Tape Roller Bushing
5	242-14142	Supply Shaft and Disc. Assembly
6	241-14062-4	Record Head Cover - Right
7	241-14072-1	Control Handle
	241-15116	Control Handle Set Screw, Cone Point Socket Head, #8-32 x 1/4", Special
8	242-14145	Takeup Shaft and Disc Assembly
9	242-14147	Top Plate Assembly
10	242-14148	Takeup Pulley and Disc Assembly
11	241-14129-3	Takeup Drive Belt
12	242-14159	Record Head and Can Assembly
13	242-14181	Tape Guide Roller Assembly
	241-14205	Tape Guide Top
14	242-14155	Pinch Roller Assembly
15	242-14090	Pinch Roller Lever and Shaft Assembly
16	242-14200	Pressure Pad Lever Assembly on Units Below Serial 5550
	242-15154	Pressure Pad Lever Assembly on Units Above Serial 5550
	241-12059	Pressure Pad Wave Washer
	2965-1	Pressure Pad Retaining Ring
17	241-14219	Pressure Pad Spring on Serial 5550 and Higher
18	241-14116	Bell Crank Spring
19	241-14187	Pinch Roller Spring
20	241-14099	Brake Lever Spring
21	242-14095	Brake Yoke Assembly
22	242-14079	Mounting Plate Assembly
23		Brake Lever
24	241-15210	Lift Lever Spring
25		Lift Actuator Arm
26	242-14153	Control Cam and Shaft Assembly
27	242-14073	Record Lock Arm Assembly
28	242-14762	Record Lock Arm Spring Assembly
	441-13609	Index Ball (for Item 27)
29	242-14124	Flywheel Assembly for Model 109
	242-14124-2	Flywheel Assembly for Model 110
	242-14124-1	Flywheel Assembly for Model 111
	242-14125-4	Flywheel Assembly for Model 112
30	242-14123	Support Bracket Assembly
31	241-14116	Fast-Forward Pulley Spring
32	241-14131	Fast-Forward Mechanism Spring
33	242-14785	Fast-Forward Pulley Assembly
34	241-14129-2	Fast-Forward Belt
35	241-14129-1	Rewind Drive Belt
36	241-14152	Supply Pulley
37	241-14140	Motor Suspension Bracket, R.H.
38	241-13665-1	Motor Shock Mount
39	242-14136	Motor Mounting Bracket and Spring Assembly
40	241-14141	Motor Suspension Bracket, L.H.
41	241-14139	Motor Rock Spring
42	241-14135-2	Motor Pulley - Model 109
	241-14135-1	Motor Pulley - Model 110
	241-14772-1	Motor Pulley - Model 111
	241-15032-1	Motor Pulley - Model 112
43	241-14133	Motor
44	241-14134	Motor Fan
45	241-14220	Motor Return Spring
46	241-14088	Fast Forward Release Lever
47	242-14108	Fast-Forward Arm and Pulley Assembly
48	242-14111	Fast-Forward Plate and Pulley Assembly
49		Lift Lever and Spring Assembly
50	241-12035	Lift Lever Adjusting Lock Nut
51	241-14130	Trip Mechanism Spring
52	242-14117	Fast-Forward Trip Brake Assembly
	241-14066	Tone Control Knob
	241-14054	Fuse Assembly Knob
	241-14071	Selector Knob
	242-14069	Microphone Assembly
	242-14288	External Speaker Cord and Plug Assembly

ELECTRICAL PARTS LIST

Item No.	Part No.	Use and Description
V1A	5879	1st AF Amplifier, 5879 Tube
B	6AU6	1st AF Amplifier, 6AU6 Tube (Used in Model 109 - Up to Serial No. 5202)
V2A	12AX7	2nd AF Amplifier, 12AX7 Tube (Used in Model 109 - Up to Serial No. 5202)
V3	6V6GT	Bias Oscillator, 6V6GT Tube
V4	6V6GT	Power Output, 6B6GT Tube
V5	5Y3GT	Rectifier, 5Y3GT Tube
C1A	241-14236	Filter, 40 Mfd. @ 450 Volts, Electrolytic
B		Filter, 40 Mfd. @ 450 Volts, Electrolytic
C2A	241-14238	Decoupling, 40 Mfd. @ 450 Volts, Electrolytic
B		Decoupling, 40 Mfd., @ 450 Volts, Electrolytic
C		Output Decoupling, 40 Mfd. @ 25 Volts, Electrolytic
C3	S6063	1st AF Amp, Cathode, 50 Mfd. @ 6 Volts Electrolytic
C4	S6063	2nd AF Amp. Cathode, 50 Mfd. @ 6 Volts, Electrolytic (Not Used in all Models)
C5	S3750	Tone Compensation, 500 Mmf. (Models 109 and 110 use 1700 Mmf. in this application)
C6	S3595	1st AF Amp. Screen, .1 Mfd. @ 400 Volts
C7	S4261	Audio Coupling, .05 Mfd. @ 400 Volts
C8	S3595	Audio Coupling, .1 Mfd. @ 400 Volts
C9	29670-2	Tone Compensation, 50 Mmf. @ 500 Volts
C10	S4261	Tone Compensation, .05 Mfd. @ 400 Volts
C11	241-14974	AF Feedback, .25 Mfd. @ 150 Volts (Used in Models 111, 112 only)
C12	S4261	Audio Coupling, .05 Mfd., @ 400 Volts
C13	241-14260-1	Osc. Grid Cap., 3000 Mmf.
C14	241-14260-1	Fixed Trimmer, 3000 Mmf.
C15	241-14260-2	Oscillator Coupling, 1700 Mmf.
C16	S6065-5	Oscillator Coupling, 1000 Mmf.
C17	29670-4	Tone Compensation, 200 Mmf. @ 500 Volts
C18	S4261	Audio Coupling, .05 Mfd. @ 400 Volts
C19	S4261	Indicator Coupling, .05 Mfd. @ 400 Volts
C20	S4556	Indicator Filter, .0005 Mfd. @ 600 Volts
C21	241-14260-1	Output Plate Bypass, .003 Mfd. @ 600 Volts
R1	241-14233	Volume Control, 500K Ohms, 1/2 Watt
R2	241-14234 or 241-14234-1	Tone Control and Switch, 2.5 Meg., 1/2 Watt
R3	29501-29	Tone Compensation, 22K Ohms, 1/2 Watt
R4	29501-53	Series High Lever Input, 510K Ohms, 1/2 Watt
R5	29501-53	1st AF Amp. Grid, 510K Ohms 1/2 Watt
R6	29501-11	1st AF Amp. Cathode, 1000 Ohms, 1/2 Watt
R7	29501-57	1st AF Amp. Screen, 1 Meg., 1/2 Watt
R8	29501-48	1st AF Amp. Plate, 240K Ohms, 1/2 Watt
R9	29501-29	1st AF Amp. Decoupling, 22K Ohms, 1/2 Watt
R10	29501-14	2nd AF Amp. Cathode, 2000 Ohms, 1/2 Watt (Some models use 1000 Ohms)
R11	29501-48	2nd AF Amp. Plate, 240K Ohms, 1/2 Watt
R12	29501-29	Decoupling, 22K Ohms, 1/2 Watt
R13	29501-41	Tone Compensation, 100K Ohms, 1/2 Watt
R14	29501-41	Tone Compensation, 100K Ohms, 1/2 Watt
R15	29501-19	2nd AF Amp. Grid, 3600 Ohms, 1/2 Watt (Some models use 5100 Ohms)
R16	29501-57	2nd AF Amp. Grid, 1 Meg., 1/2 Watt
R17	29501-35	2nd AF Amp. Grid, 51K Ohms, 1/2 Watt (Not used in all models)
R18	29501-14	2nd AF Amp. Cathode, 2000 Ohms, 1/2 Watt (Some modes use 1000 Ohms)
R19	29501-48	2nd AF Amp. Plate, 24OK Ohms, 1/2 Watt
R20	29501-48	Output Grid, 240K Ohms 1/2 Watt
R21	29501-98	Output Cathode, 300 Ohms, 1 Watt
R22	29501-23	Feedback, 8200 Ohms, 1/2 Watt
R23		Voice Coil Shunt, 3.3 Ohms, 3 Watts (Some models use 10 Ohms)
R24	29501-48	Tone Compensation 240K Ohms, 1/2 Watt
R25	29501-48	Tone Compensation 240K Ohms, 1/2 Watt
R26	29501-76	Bias Osc. Grid, 10K Ohms, 1 Watt
R27	29501-51	Indicator Network, 390K Ohms, 1/2 Watt
R28	29501-35	Indicator Network, 51K Ohms, 1/2 Watt
R29	29501-35	Indicator Network, 51K Ohms, 1/2 Watt
T1A	242-14288	Power Transformer (Used in Models 109, 111)
B	242-15004	Power Transformer (Used in Models 110, 112)
T2	242-14230	Output Transformer
SP1	241-14070	PM Speaker, 5" x 7"
SP2	Part of Speaker	Cone, 4.2 Ohms Voice Coil
L1	811A-1	Filter Choke, 430 Ohms, 14 Henries
L2	242-14603	Bias Osc. Coil
M1		2 Amp., 250 Volt, Type 3AG
M2		Neon Lamp, Type NE-51
M3		Switch, Speaker (Not used in all models)
M4A	242-14555	Switch, Play-Record (Model 109 up to Serial #5202)
B	242-14555-3	Switch, Play-Record (Models 109, 110)
C	242-14555-3	Switch, Play-Record (Models 111, 112)



All resistance values in ohms. K = 1000.

All capacitance values less than 1 in MF and above 1 in MMF unless otherwise noted.

Coil resistance values less than 1 ohm are not shown.

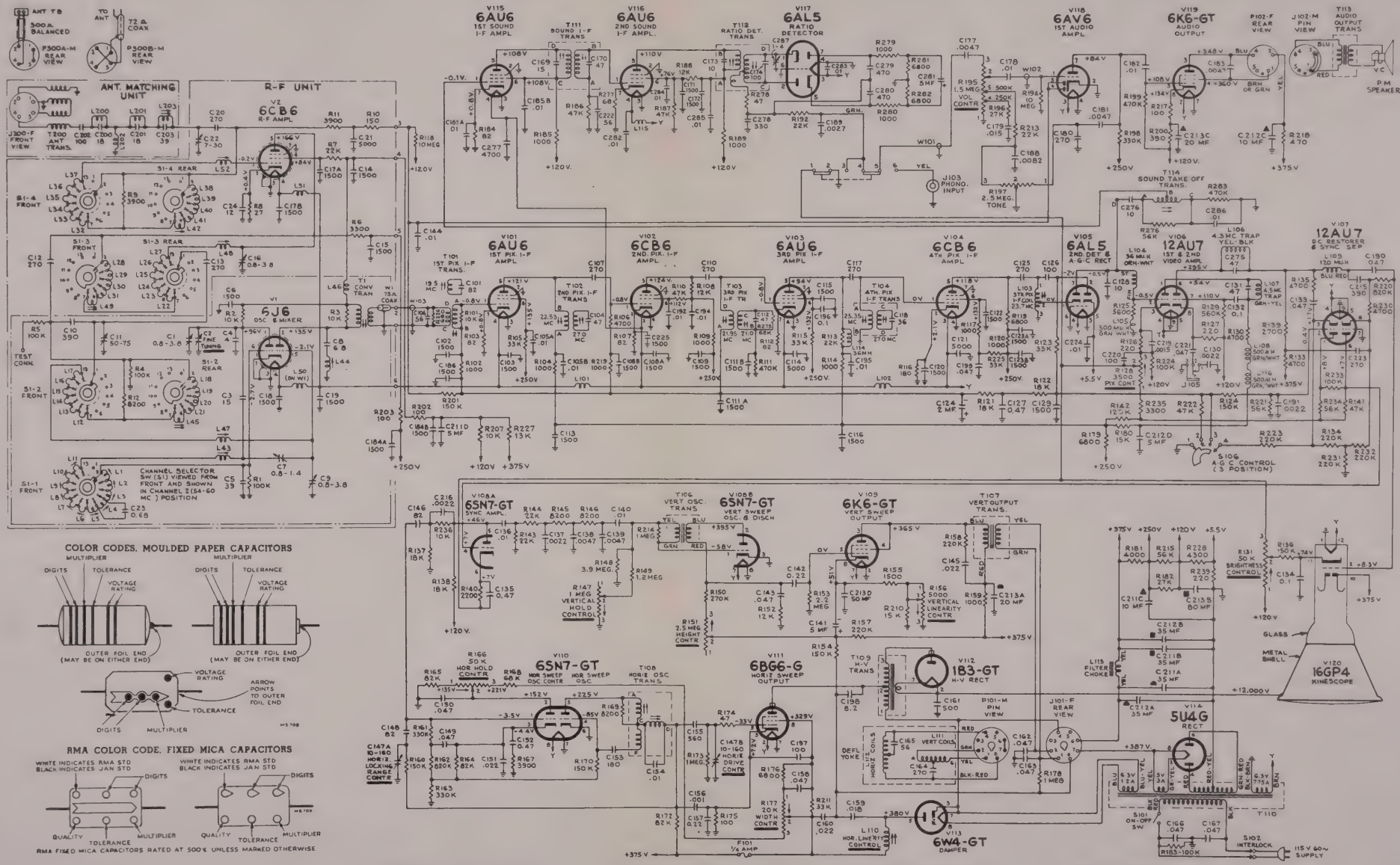
Direction of arrows at controls indicates clockwise rotation.

In some receivers, substitutions have caused changes in component lead color codes, in electrolytic capacitor values and their lug identification markings.

All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within ±20% with 117 v. a-c supply.

The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.

RCA MODEL 7T111B (Ch. KCS47GF-2)


ANT. MATCHING UNIT
R-F UNIT
6CB6 R-F AMPL
6J6 OSC & MIXER
6AU6 1ST SOUND I-F AMPL
6AU6 2ND SOUND I-F AMPL.
6AL5 RATIO DETECTOR
6AV6 1ST AUDIO AMPL.
6K6-GT AUDIO OUTPUT
6AU6 1ST PIX I-F AMPL
6CB6 2ND. PIX. I-F AMPL.
6AU6 3RD PIX I-F AMPL
6CB6 4TH PIX I-F AMPL
6AL5 2ND. DET & A.G.C. RECT
12AU7 1ST & 2ND VIDEO AMPL.
12AU7 D.C. RESTORER & SYNC SEP
6SN7-GT SYNC AMPL.
6SN7-GT VERT OSC. & OSC. & DISCH
6K6-GT VERT SWEEP OUTPUT
6SN7-GT HOR SWEEP OSC CONTR OSC
6BG6-G HORIZ SWEEP OUTPUT
1B3-GT H.V RECT
5U4G RECT
6W4-GT DAMPER
16GP4 KINESCOPE
COLOR CODES, MOULDED PAPER CAPACITORS
RMA COLOR CODE, FIXED MICA CAPACITORS

All resistance values in ohms. K = 1000.

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Coil resistance values less than 1 ohm are not shown.

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The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.

RCA MODEL 16T152 (Ch. KCS47E)

PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

SET 152 FOLDER 6A

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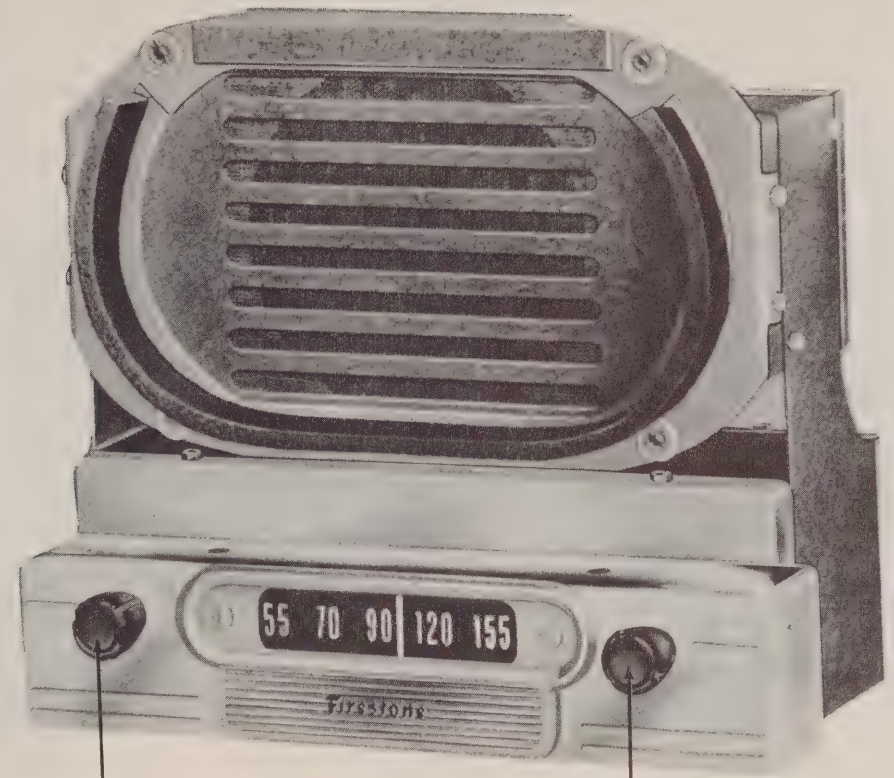
FIRESTONE
MODEL 4-B-62



FIRESTONE
MODEL 4-B-62

TRADE NAME	Firestone, Model 4-B-62
SUPPLIER	Firestone Tire & Rubber Co., Akron, Ohio
TYPE SET	Battery Operated Custom-Built 1950-1951 Studebaker, Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AT6 Det.-AVC-AF, 6AQ5 Power Output, 6X4 Rectifier
POWER SUPPLY	6Volt Storage Battery — RATING 5.5 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set the left hand edge of pointer carriage 2 3/8" from the edge of the chassis. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7, (grid), of 6BE6, (V2) Low side to chassis.	455KC (400~Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	100MMF	High side to antenna terminal. Low side to chassis.	1600KC	"	"	A5	"
3.	"	"	1400KC	Tune for maximum output.	"	A6, A7	"
4.	"	"	600KC	"	"	A8, A9	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		FIRESTONE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det.-AVC-AF	6AT6	6AT6	7BT	
V5	Power Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	20	350	CE-86	AFH 3-107		UP2235C		TVL-3678	■ Filter
B	20	350							▲ Filter
C	20	25							Output Cathode
C2	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	RF Amp. Screen
C4	.05	200	C207	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	100		CC200	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Osc. Grid Cap.
C6	220			SI220	D6-221	5W5T2	GP2K-221	5GA-T22	Diode RF Filter †
C7	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling ‡
C8	220			SI220	D6-221	5W5T2	GP2K-221	5GA-T22	AF Amp. Plate †
C9	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C10	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Output Plate
C11	.008	1600	C205			PTE16D8		MB-D8	Buffer Cap.
C12	.5	100	C209	P185-5		GT2P5		68P20	Hash Filter
C13	.5	100	C209	P185-5		GT2P5		68P20	Hash Filter

† Some models use 220MMF in this application (Mfgrs. Part No. CC201).
‡ Some models use .002MFD in this application (Mfgrs. Part No. C203).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	750KΩ	½	RV-570	Q13-137	AG-79-Z		Volume Control
B	Shaft		Not Req.	Not req.	FS-3		Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SWB		Attach to R1A Per Instructions

RESISTORS

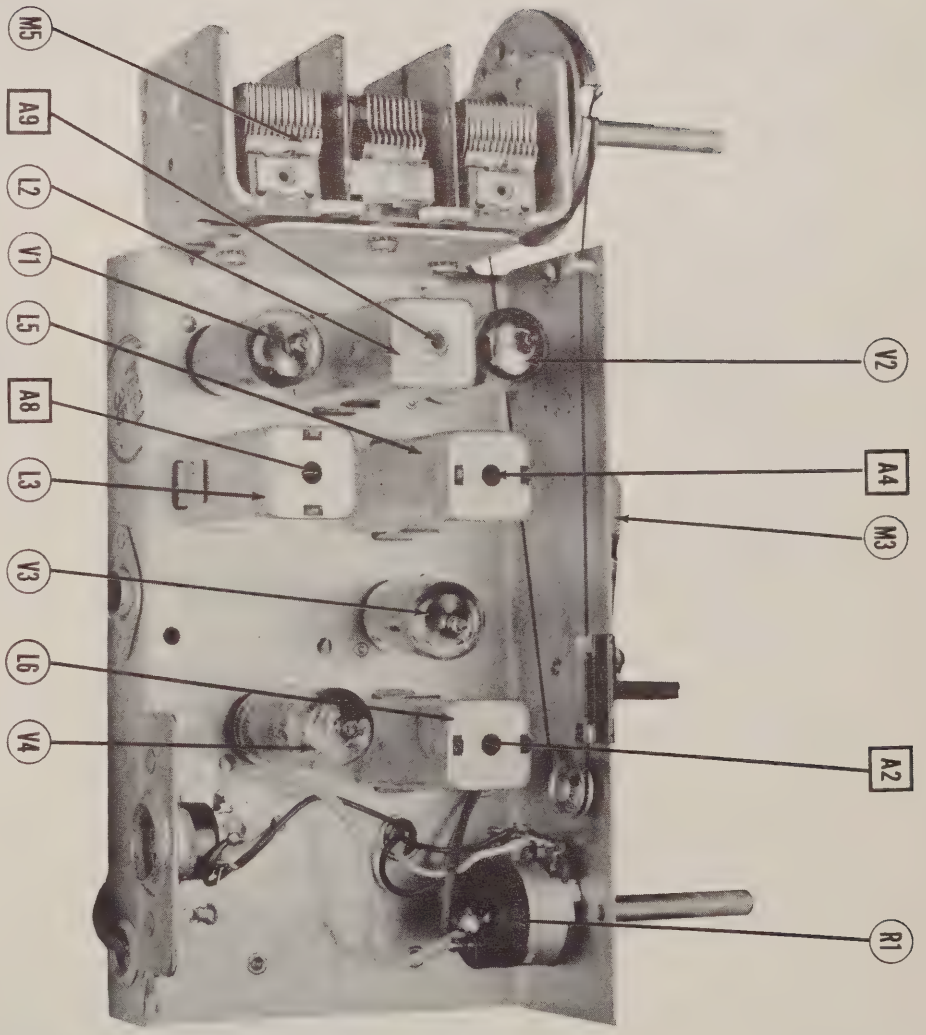
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	FIRESTONE PART No.	IRC PART No.	
R2	1Meg	½	R309	BTS-1Meg	RF Amp. Grid
R3	330Ω	½	R303	BTS-330	RF Amp. Cathode
R4	22KΩ	½	R306	BTS-22K	Osc. Grid
R5	1500Ω	½	R314	BTS-1500	IF Amp. Cathode
R6	22KΩ	2	R313	BTB-22K	Screen Dropping
R7	2Meg	½	R310	BTS-2.2Meg	AVC Network
R8	10Meg	½	R311	BTS-10Meg	AF Amp. Grid
R9	270KΩ	½	R307	BTS-270K	AF Amp. Plate
R10	680KΩ	½	R308	BTS-680K	Output Grid-See Note 1
R11	330Ω	½	R303	BTS-330	Output Cathode
R12	1000Ω	1	R312	BTA-1000	Filter
R13	68Ω	½	R301		Hash Suppressor-See Note 2
R14	68Ω	½	R301		Hash Suppressor-See Note 2

Note 1 Some models use 500KΩ resistor in this application.
Note 2 Some models use 100Ω resistor in this application.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 3A	425VCT .038ADC			TV-100 or 318V-2		P-2970	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	4.8KΩ	3.4Ω	260Ω	.7Ω	Part of SP1	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD RES.	V. C. IMP.	PM-705	ST105 Mod. P5-X	5A1	
	PM	3.4Ω				
	CONE DIA.	V. C. DIA.				
SP2	5"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	FIRESTONE PART No.		
L1	Ant. Hash Choke	1.3Ω		L200		
L2A	Ant. Coil	14Ω	5Ω	57FB-3		
B	Ant. Coil			15053		Alternate
L3A	RF Coil	100Ω	7.5Ω	57FB-4		
B	RF Coil			15054		Alternate
L4	Osc. Coil	9Ω	.9Ω	L201		
L5A	1st IF	19Ω	19Ω	1655-16		
B	1st IF			14977		Alternate
L6A	2nd IF	19Ω	19Ω	1655-16		
B	2nd IF			14977		Alternate
L7	Hash Choke	.1Ω		L202		
L8	Hash Choke	0Ω		L203		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				FIRESTONE PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6.3 VDC	60~	V-83	5301	5301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			FIRESTONE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	3AG	15A	A201	A300	311015	155020	

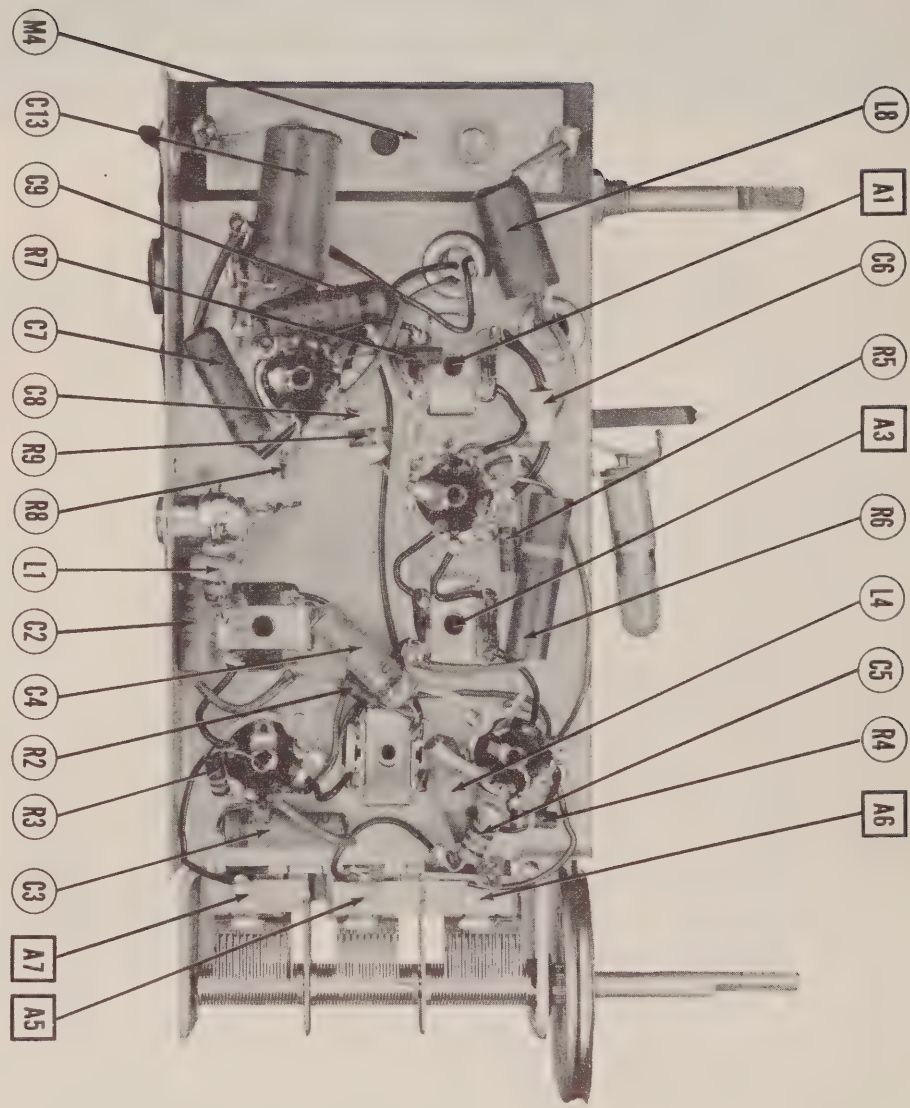
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					FIRESTONE PART No.		
M3	Bayonet	6-8	.15	Brown	T47		Type number 47.

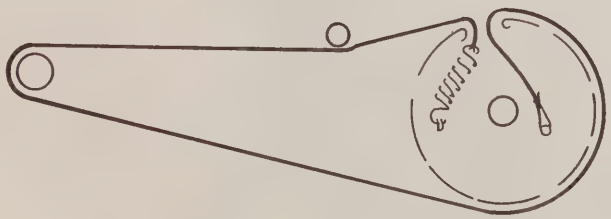
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M4	Spark Plate		
M5	3 Gang Var. Cap.	CV-400	(25-397MMF, 27-386MMF, 24-201MMF)
	Knob	H310	
	Dial Pointer	PS100	

CHASSIS—BOTTOM VIEW



TUNING GANG FULLY CLOSED

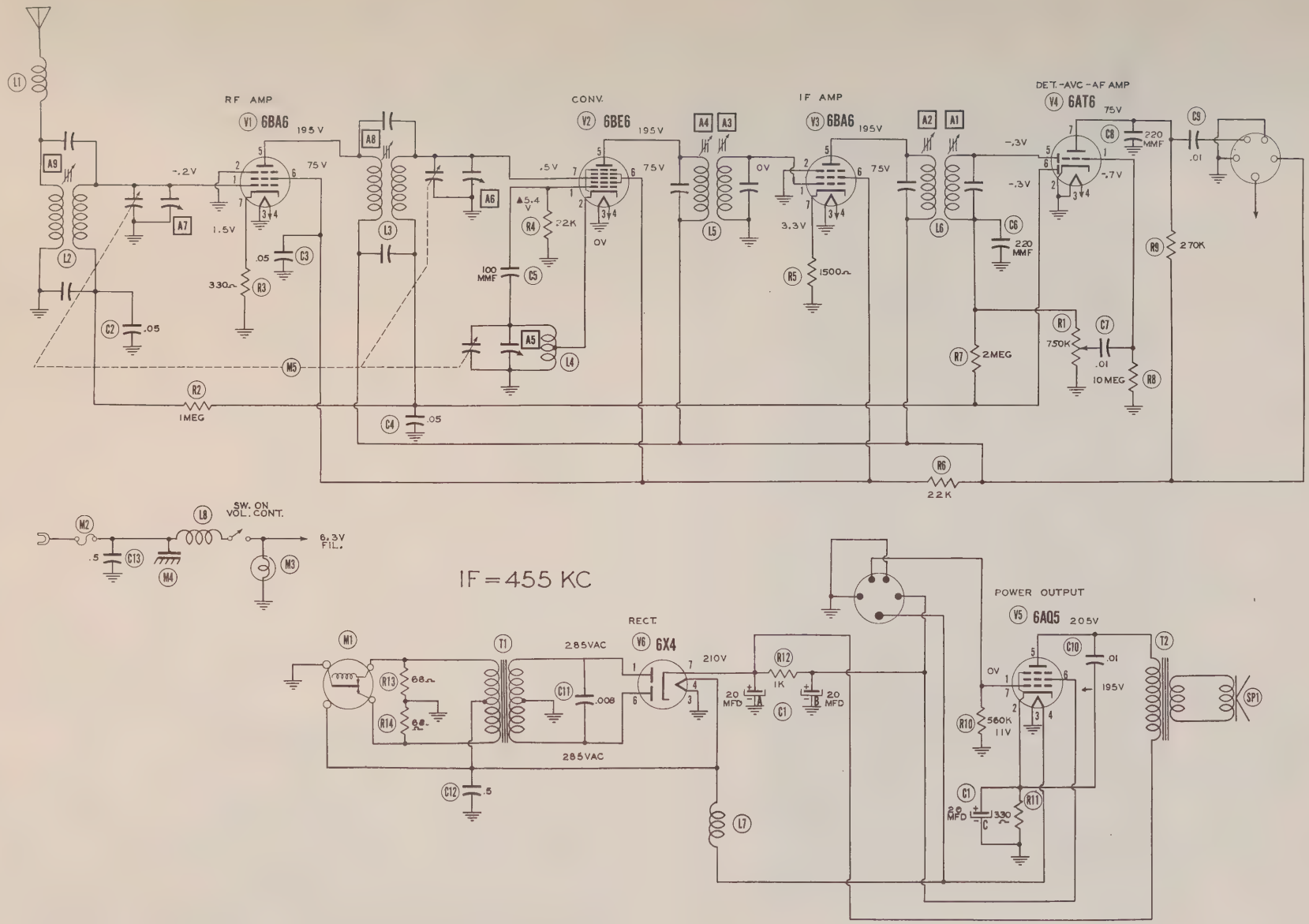


DIAL CORD DRIVE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	3.7Meg	0Ω	0Ω	.5Ω	†1KΩ	†23KΩ	330Ω
V 2	6BE6	20KΩ	.9Ω	0Ω	.5Ω	†1KΩ	†23KΩ	2.7Meg
V 3	6BA6	19Ω	0Ω	0Ω	.5Ω	†1KΩ	†23KΩ	1.5KΩ
V 4	6AT6	10Meg	0Ω	0Ω	.5Ω	750KΩ	2.7Meg	†270KΩ
V 5	6AQ5	680K	330Ω	0Ω	.5Ω	†260Ω	†1KΩ	680K
V 6	6X4	250Ω	Inf.	0Ω	.5Ω	Inf.	270Ω	50KΩ

† MEASURED FROM PIN 7 OF V6.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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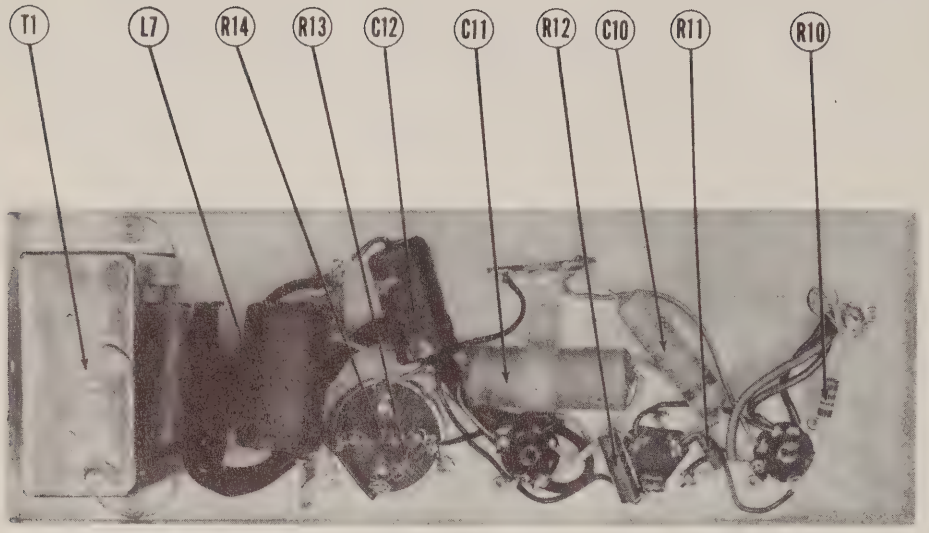
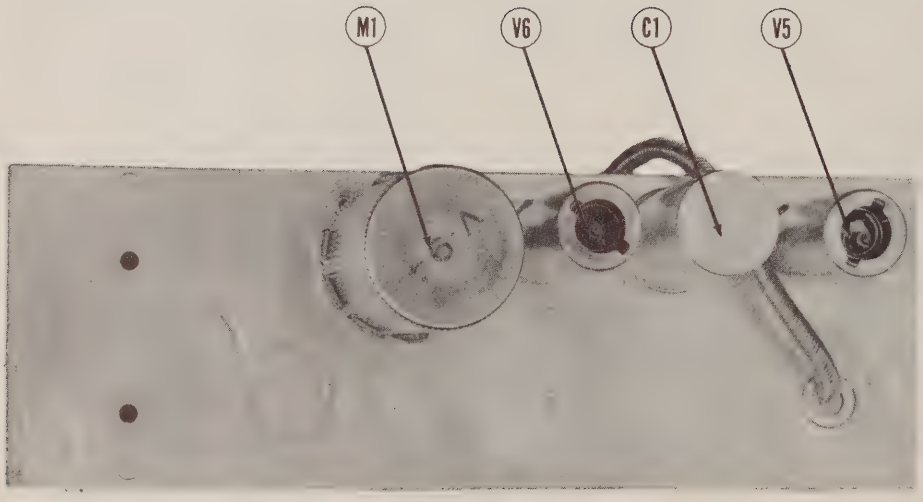
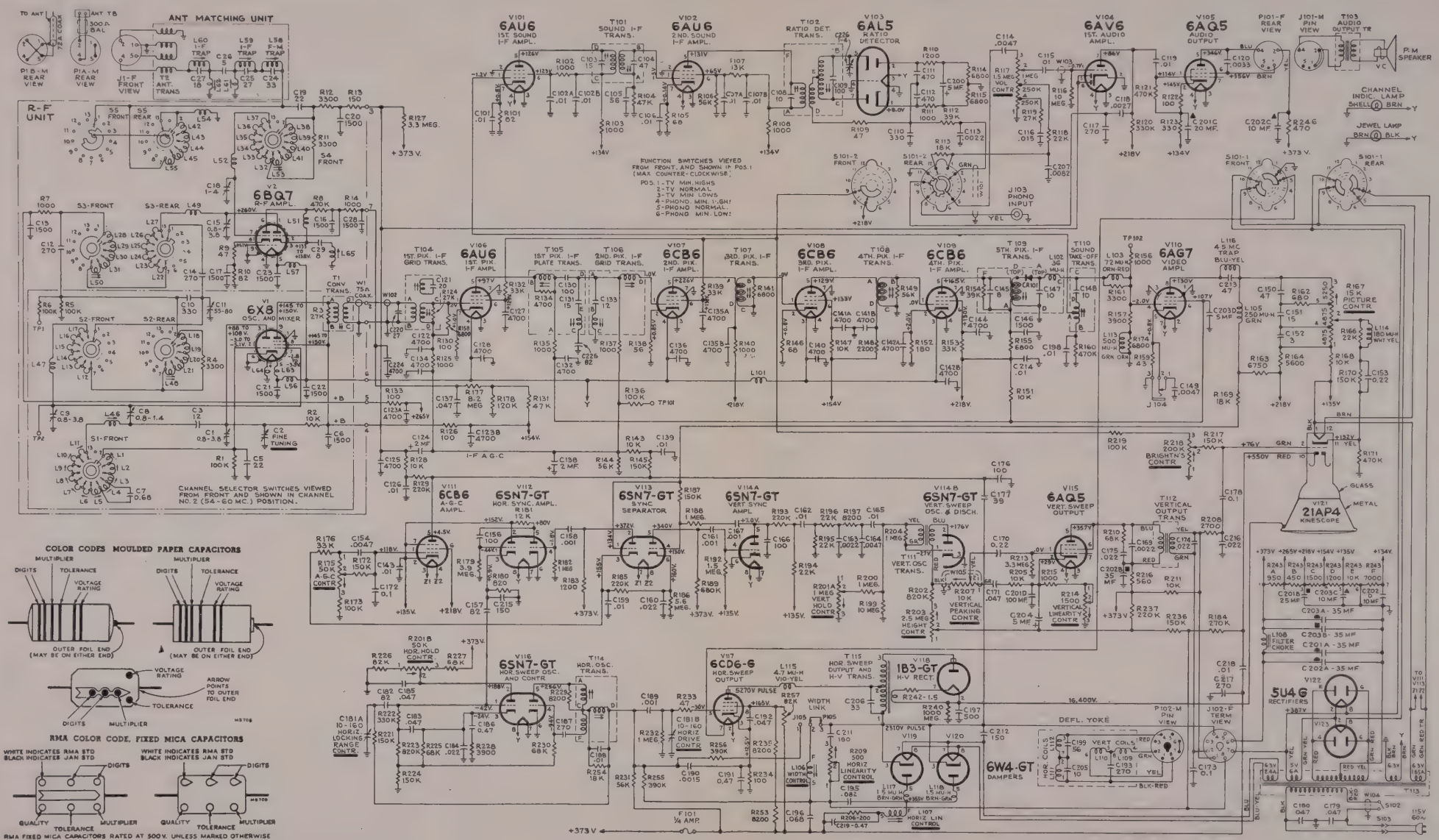
1 - DC Voltage measurements are at 20,000 ohms per volt; AC
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.


T1
L7
R14
R13
C12
C11
R12
C10
R11
R10


M1
V6
C1
V5


ANT MATCHING UNIT
R-F UNIT
V101 6AU6 1ST. SOUND I-F AMPL.
V102 6AU6 2ND. SOUND I-F AMPL.
V103 6AL5 RATIO DETECTOR
V104 6AV6 1ST. AUDIO AMPL.
V105 6AQ5 AUDIO OUTPUT
V2 6BQ7 R-F AMPL.
V106 6AU6 1ST. PIX. I-F AMPL.
V107 6CB6 2ND. PIX. I-F AMPL.
V108 6CB6 3RD. PIX. I-F AMPL.
V109 6CB6 4TH. PIX. I-F AMPL.
V1 6X8 OSC. AND MIXER
V110 6AG7 VIDEO AMPL
V111 6CB6 A-G-C AMPL.
V112 6SN7-GT HOR. SYNC. AMPL.
V113 6SN7-GT SYNC SEPARATOR
V114A 6SN7-GT VERT. SYNC AMPL.
V114B 6SN7-GT VERT. SWEEP OSC. & DISCH.
V115 6AQ5 VERT. SWEEP OUTPUT
V116 6SN7-GT HOR. SWEEP OSC. AND CONTR.
V117 6CD6-G HOR. SWEEP OUTPUT
V118 1B3-GT H-V RECT.
V119 6W4-GT DAMPERS
V121 21AP4 KINESCOPE
V122 5U4-G RECTIFIERS
T101 SOUND I-F TRANS.
T102 RATIO DET. TRANS.
T103 AUDIO OUTPUT TR
T104 1ST PIX. I-F GRID TRANS.
T105 1ST PIX. I-F PLATE TRANS.
T106 2ND. PIX. I-F GRID TRANS.
T107 3RD. PIX. I-F TRANS.
T108 4TH. PIX. I-F TRANS.
T109 5TH. PIX. I-F TRANS.
T110 SOUND TAKE-OFF TRANS.
T111 VERT. OSC TRANS.
T112 VERTICAL OUTPUT TRANS
T113 POWER TRANS.
T114 HOR. OSC. TRANS.
T115 HOR. SWEEP OUTPUT AND H-V TRANS.
J103 PHONO INPUT
J104
P.M SPEAKER
CHANNEL INDIC. LAMP
JEWEL LAMP
DEFL. YOKE
FUNCTION SWITCHES VIEWED FROM FRONT, AND SHOWN IN POS. 1 (MAX. COUNTER-CLOCKWISE)
POS. 1 - TV MIN. HIGHS
2 - TV NORMAL
3 - TV MIN. LOWS
4 - PHONO MIN. HIGH
5 - PHONO NORMAL
6 - PHONO MIN. LOW
CHANNEL SELECTOR SWITCHES VIEWED FROM FRONT AND SHOWN IN CHANNEL NO. 2 (54 - 60 MC.) POSITION.
I-F A.G.C
+373 V.
+218V.
+154V.
+135V.
+134V.
+76V
+550V
COLOR CODES MOULDED PAPER CAPACITORS
RMA COLOR CODE, FIXED MICA CAPACITORS
RMA FIXED MICA CAPACITORS RATED AT 500 V. UNLESS MARKED OTHERWISE

All resistance values in ohms. K = 1000.

All capacitance values less than 1 in MF and above 1 in MMF unless otherwise noted.

Coil resistance values less than 1 ohm are not shown.

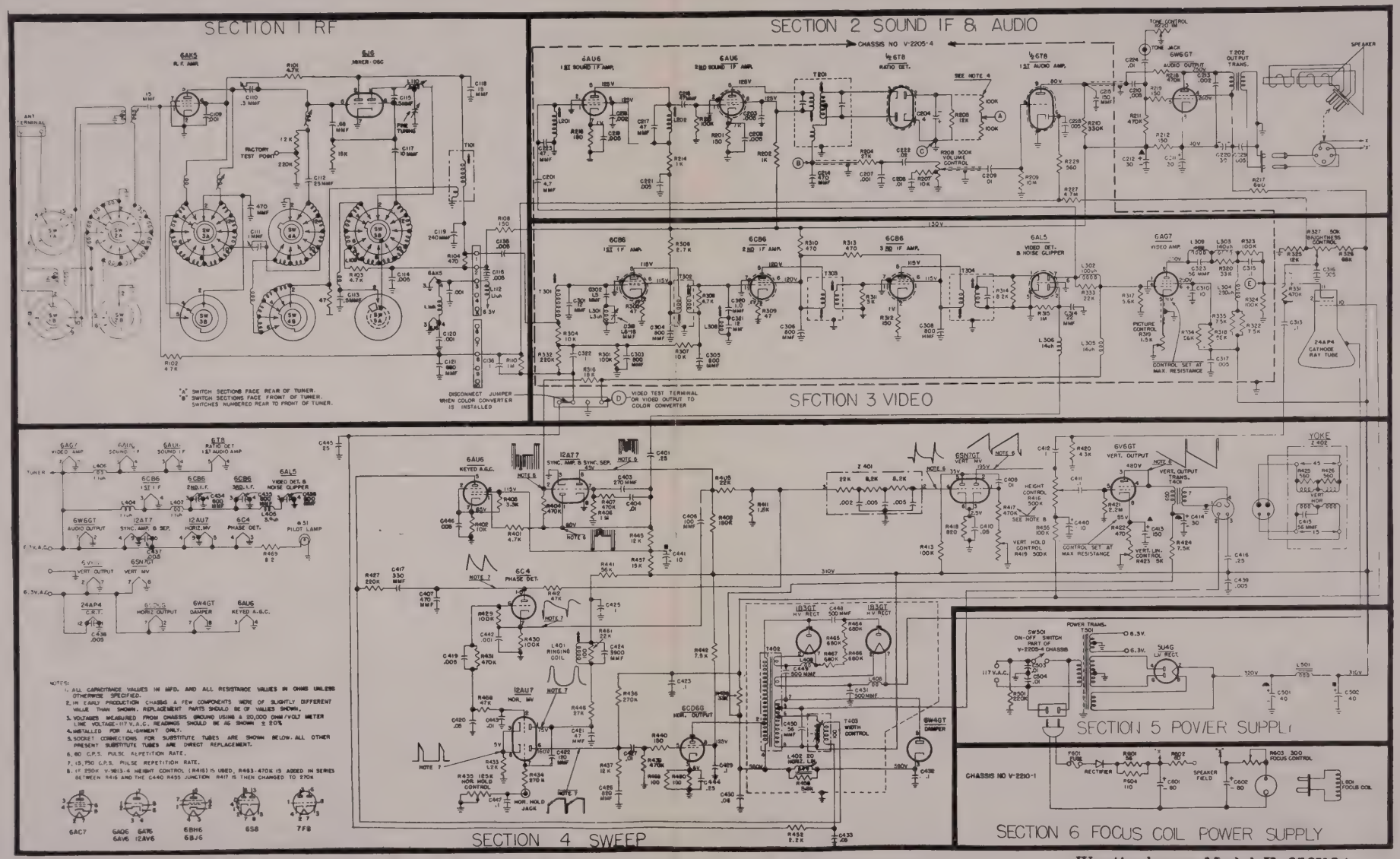
Direction of arrows at controls indicates clockwise rotation.

In some receivers, substitutions have caused changes in component lead color codes, in electrolytic capacitor values and their lug identification markings.

All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within ±20% with 117 v. a-c supply.

The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.

RCA MODELS 21T176, 21T177 21T178, 21T179 (Ch. KCS68C)


SECTION 1 RF
SECTION 2 SOUND IF & AUDIO
SECTION 3 VIDEO
SECTION 4 SWEEP
SECTION 5 POWER SUPPLY
SECTION 6 FOCUS COIL POWER SUPPLY

The Cooperation of the Manufacturer of This Receiver Makes It Possible to Bring You This Service.

Westinghouse Model H-653K24
Ch. V-2202-2 and Ch. V-2210-1.

PRELIMINARY DATA
The data contained in this folder is published in advance of regular PHOTOFACT Coverage

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PHOTOFACT* Folder

FIRESTONE
MODEL 13-G-56

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Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

FIRESTONE
MODEL 13-G-56

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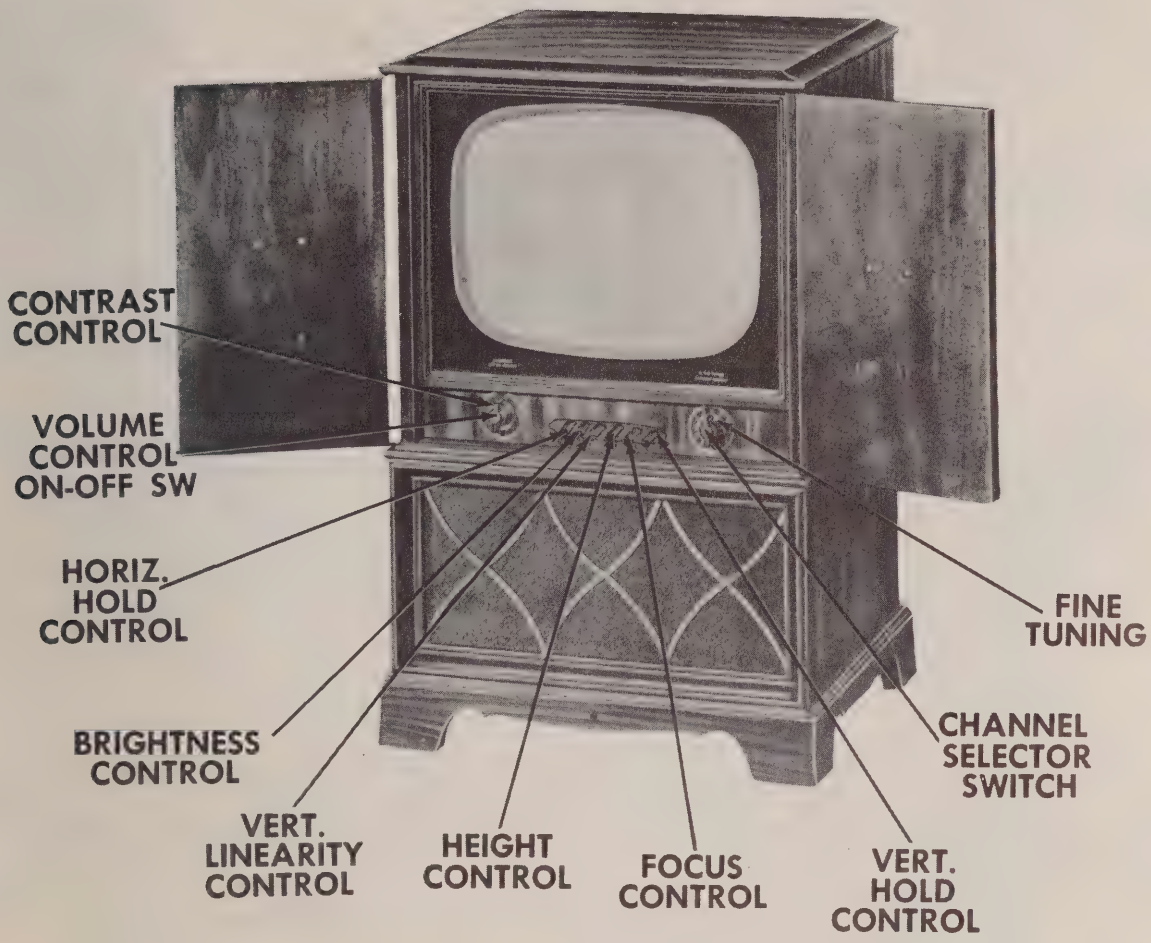
DATE 11-51 SET 152 FOLDER 7



FIRESTONE
MODEL 13-G-56

TRADE NAME	Firestone, Model 13-G-56
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 2.1 Amp. at 117 Volts AC
TUNING RANGE—	CHANNELS 2 thru 13

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Tube Placement Charts 5
Voltage and Resistance Measurements 8

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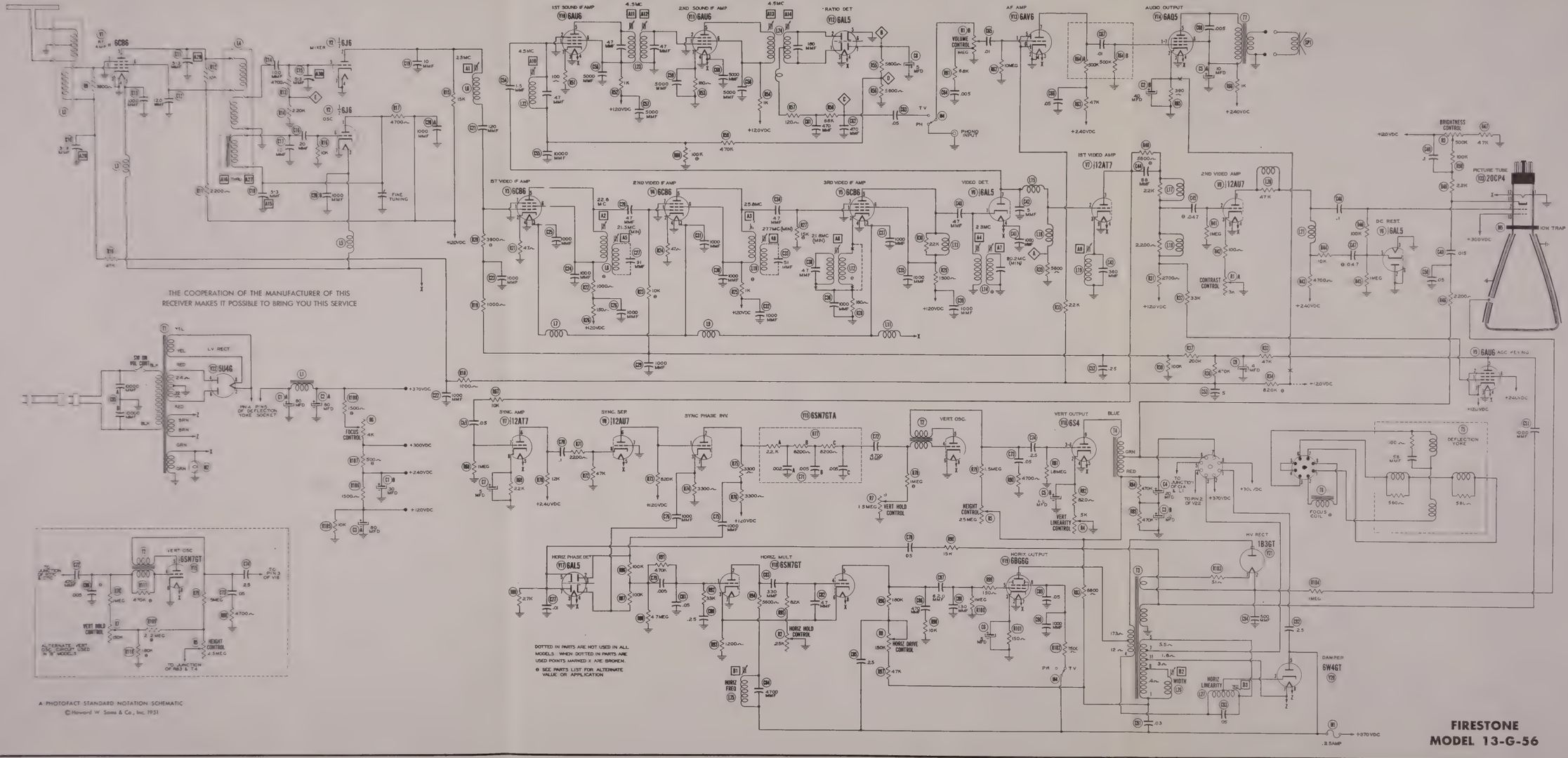
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
© SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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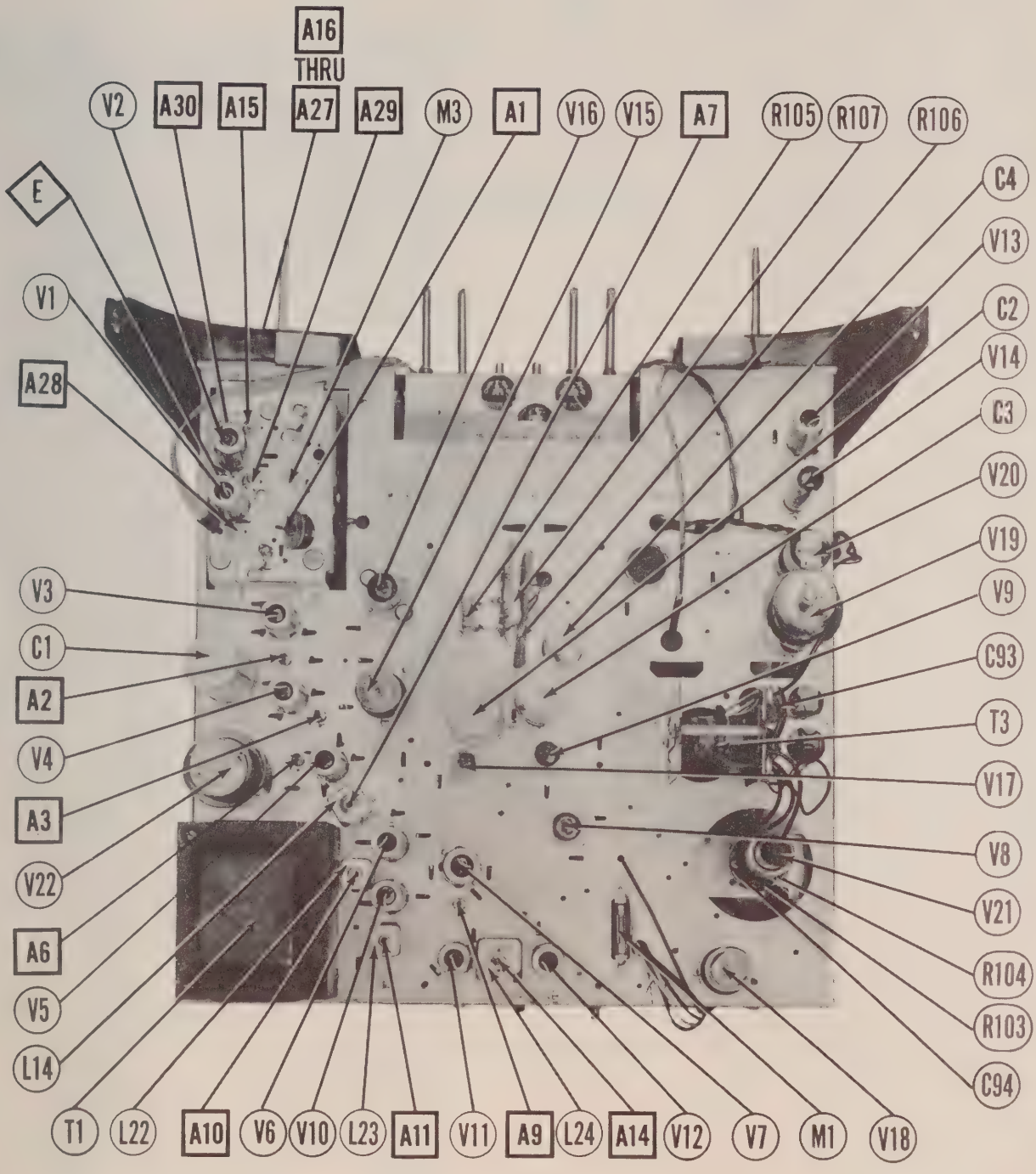
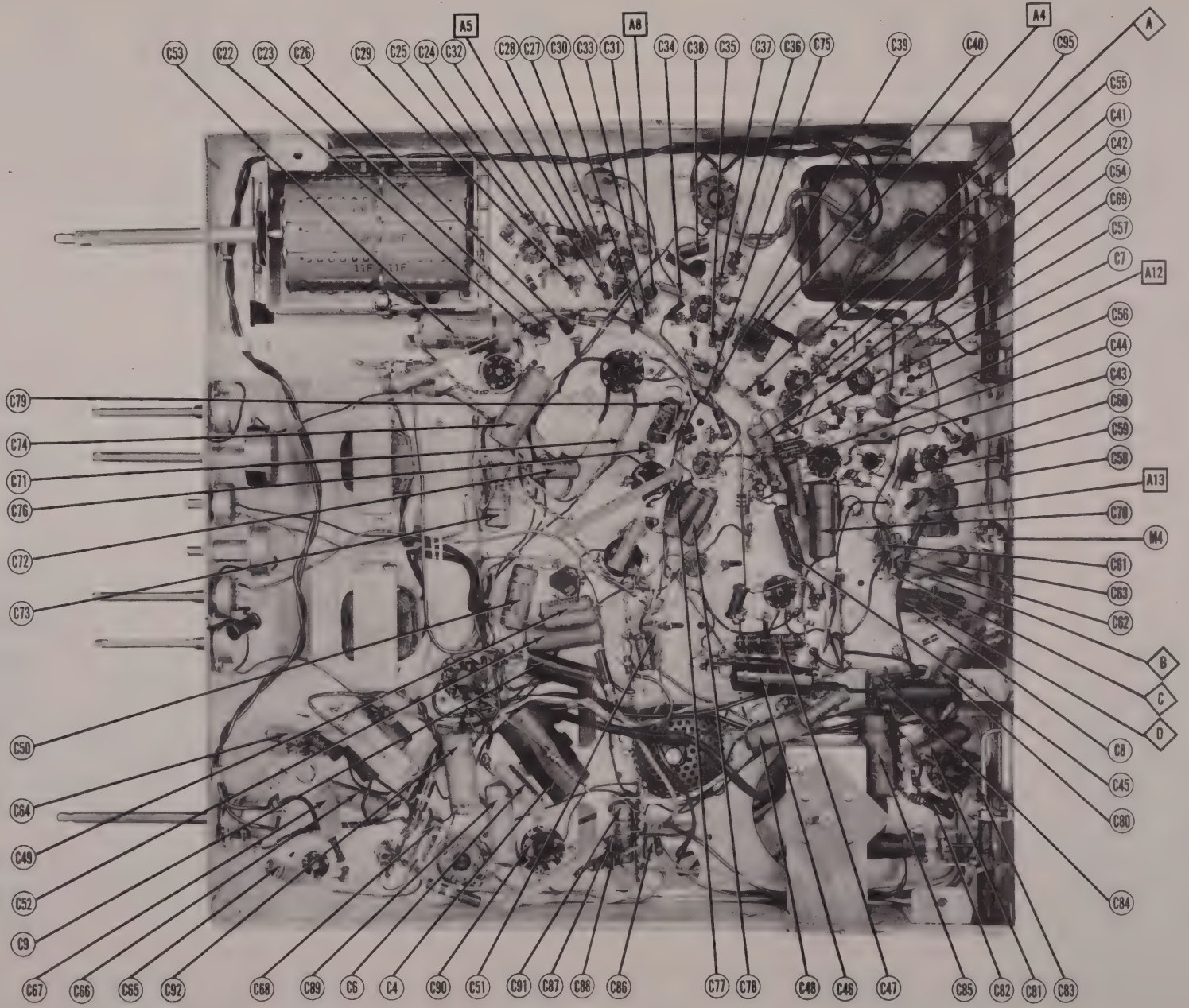
FIRESTONE
MODEL 13-G-56

FIRESTONE
MODEL 13-G-56

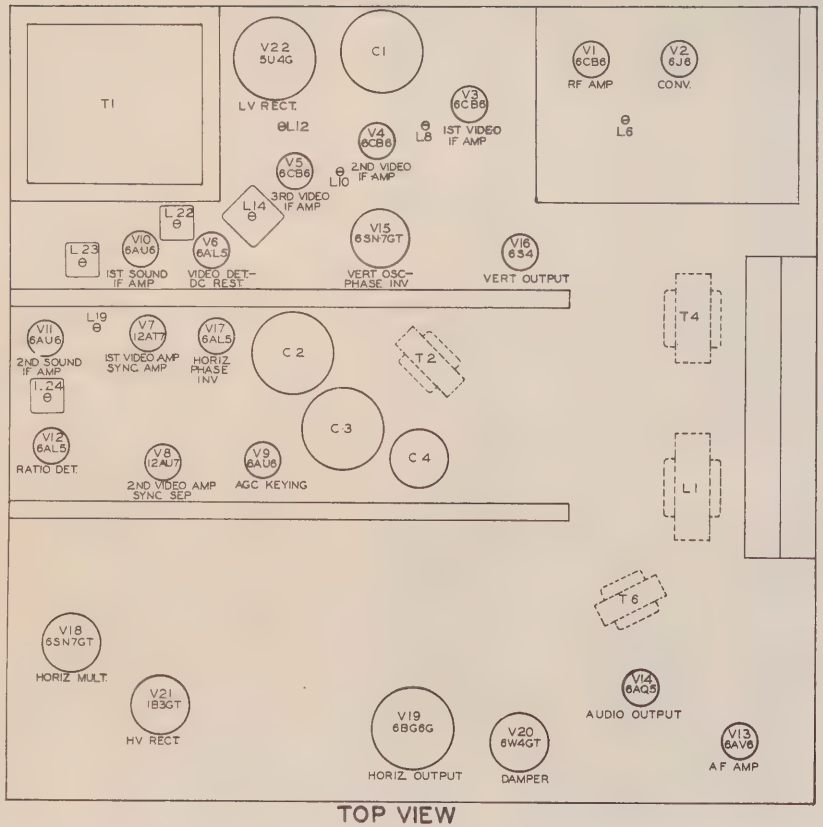


CHASSIS TOP VIEW

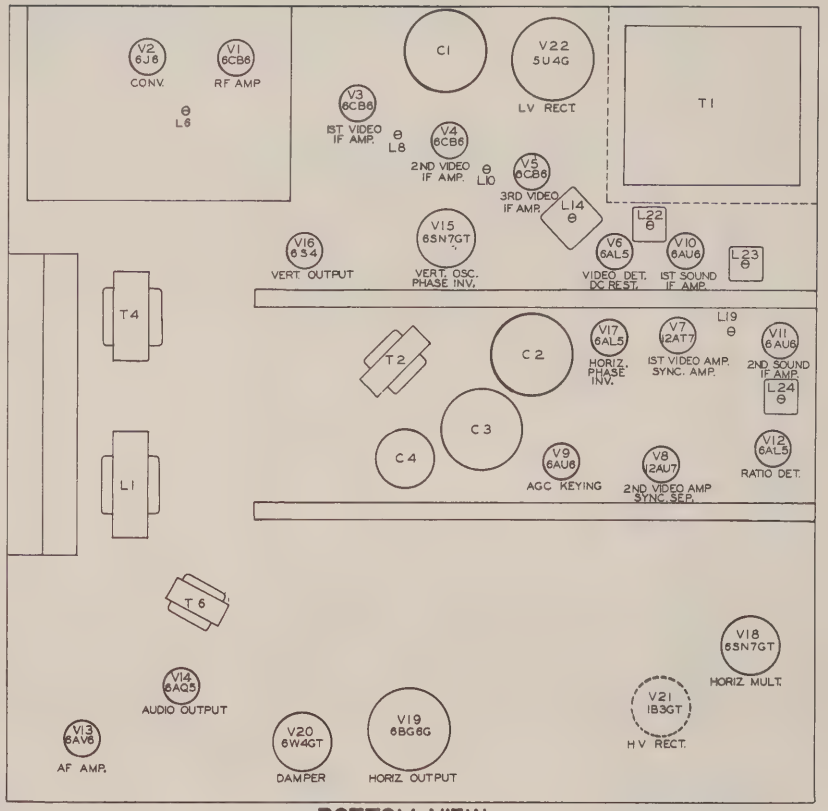
FIRESTONE
MODEL 13-G-56



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V18), from its socket.

VIDEO IF ALIGNMENT (A VERSIONS ONLY)

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to ungrounded lead of C52, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25MC (unmod.)	Any	DC probe to Point A . Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	22.6MC	"	"	A2	"
3.	"	"	25.8MC	"	"	A3	"
4.	"	"	23MC	"	"	A4	"
5.	"	"	21.5MC	"	"	A5	Adjust for MINIMUM deflection.
6.	"	"	21.8MC	"	"	A6	"
7.	"	"	20.2MC	"	"	A7	"
8.	"	"	27.7MC	"	"	A8	"

VIDEO IF ALIGNMENT (B VERSIONS ONLY)

See instructions under A version Video IF alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25.1MC (unmod.)	Any	DC Probe to Point A . Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A7	Adjust for MINIMUM deflection. Continue with step 9.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.7MC 22.4MC 22.6MC 25.25MC 26.2MC	Any	Vert. Amp. to Point A . Low side to chassis.		Check for response curve similar to fig. 1A or 1B. If necessary retouch A1 thru A4 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	10KΩ resistor	High side thru 10KΩ to pin 2, (Grid) of 12AT7, (V7). Low side to chassis.	Not used	4.5MC (400∿ Mod.)	Any	Vert. Amp. to pin 2, (Grid) of picture tube. Low side to chassis.	A9	Adjust for MINIMUM 400∿ indication on scope

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect a short across C55.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	10KΩ resistor	High side thru 10KΩ to pin 7, (plate), of 6AL5, (V6). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point B . Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to Point C . Common to Point D .	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	10KΩ resistor	High side thru 10KΩ to pin 7 (plate) of 6AL5, (V10). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point B . Low side to chassis.	A10, A11, A12, A13	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per fig. 2.
12.	"	"	"	"	"	Vert. Amp. to Point C . Low side to chassis.	A14	Reconnect capacitor C8. Adjust A14 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

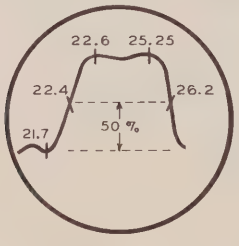


FIG. 1A

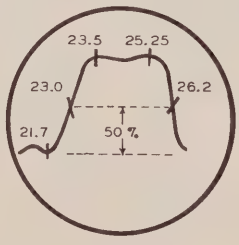


FIG. 1B

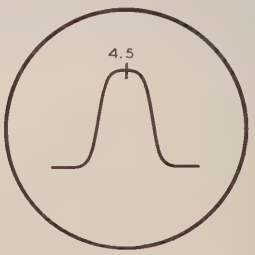


FIG. 2

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A15. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A15 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point A . Low side to chassis.	A16	Adjust to place sound marker in "notch" as per fig. 4. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A17	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A18	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A19	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A20	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A21	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A22	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A23	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A24	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A25	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A26	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A27	

RF AND MIXER ALIGNMENT

Leave the 3 volts bias connected as during video IF alignment.
Remove the AGC keying tube, (V9) from its socket.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point E . Low side to chassis.	A28, A29 A30	Adjust for response curve similar to fig. 5 with markers above 90%.
15.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to fig. 5. If markers fall below 70% on any channel, make slight adjustments of A38, A29, and A30 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.25MC	5			
			69MC (10MC SWP)	67.85MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

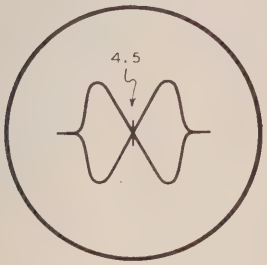


FIG. 3

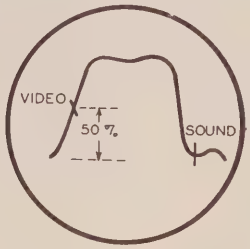


FIG. 4

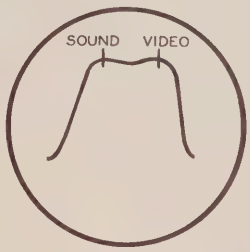


FIG. 5

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Turn the horizontal hold control to the mid-position of its range.
Adjust the horizontal frequency slug, (B1), to the center of the range over which the picture synchronizes horizontally.
Turn the horizontal drive control clockwise until white, beaded, vertical lines appear in the left center portion of the picture. Then turn the control counter-clockwise just enough to remove the lines.
Adjust the width slug, (B2), until the picture is slightly wider than necessary to fill the mask horizontally.
Adjust the horizontal linearity slug, (B), until the picture is symmetrical from left to right.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	.4VDC	0V	6.3VAC	0V	80VDC	80VDC	0V		
V 2	6J6	65VDC	75VDC	6.3VAC	0V	1.6VDC	§-3.7VDC	0V		
V 3	6CB6	-.1VDC	.5VDC	6.3VAC	0V	95VDC	95VDC	0V		
V 4	6CB6	-.1VDC	.6VDC	6.3VAC	0V	95VDC	95VDC	0V		
V 5	6CB6	0V	1.2VDC	6.3VAC	0V	95VDC	95VDC	0V		
V 6	6AL5	0V	0V	0V	6.3VAC	1.8VDC	0V	-1.5VDC		
V 7	12AT7	75VDC	-.2VDC	0V	6.3VAC	6.3VAC	285VDC	0V	6.4VDC	0V
V 8	12AU7	220VDC	0V	10.3VDC	6.3VAC	6.3VAC	14VDC	0V	2.1VDC	0V
V 9	6AU6	100VDC	105VDC	0V	6.3VAC	-.4VDC	240VDC	105VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	100VDC	100VDC	.2VDC		
V 11	6AU6	0V	0V	6.3VAC	0V	100VDC	100VDC	1.1VDC		
V 12	6AL5	-.3VDC	-.3VDC	0V	6.3VAC	0V	0V	-.6VDC		
V 13	6AV6	-.5VDC	0V	6.3VAC	0V	-.5VDC	-.5VDC	70VDC		
V 14	6AQ5	0V	13VDC	0V	6.3VAC	195VDC	210VDC	0V		
V 15	6SN7GTA	§18VDC	75VDC	16VDC	-58VDC §-32VDC	275VDC 105VDC	0V	0V	6.3VAC	
V 16	6S4	0V	39VDC 18VDC	0V	0V	6.3VAC	0V	0V	0V	550VDC
V 17	6AL5	13VDC	-4.4VDC	0V	6.3VAC	0V	0V	0V		
V 18	6SN7GT	§1VDC	310VDC	16VDC	§-8.4VDC	220VDC 180VDC	16VDC	0V	6.3VAC	
V 19	6BG6G	0V	0V	13VDC	370VDC	-22VDC	-22VDC	6.3VAC	320VDC	Top Cap *
V 20	6W4GT	0V	540VDC	610VDC	0V	370VDC	600VDC	610VDC	610VDC	
V 21	1B3GT	* DO NOT MEASURE								Top Cap *
V 22	5U4G	0V	380VDC	0V	370VAC	0V	370VAC	0V	380VDC	
V 23	20CP4	0V	1.2VDC	Pin 10 300VDC	Pin 11 110VDC 8VDC	Pin 12 6.3VAC	H.V. Connector * * 12.2KV			

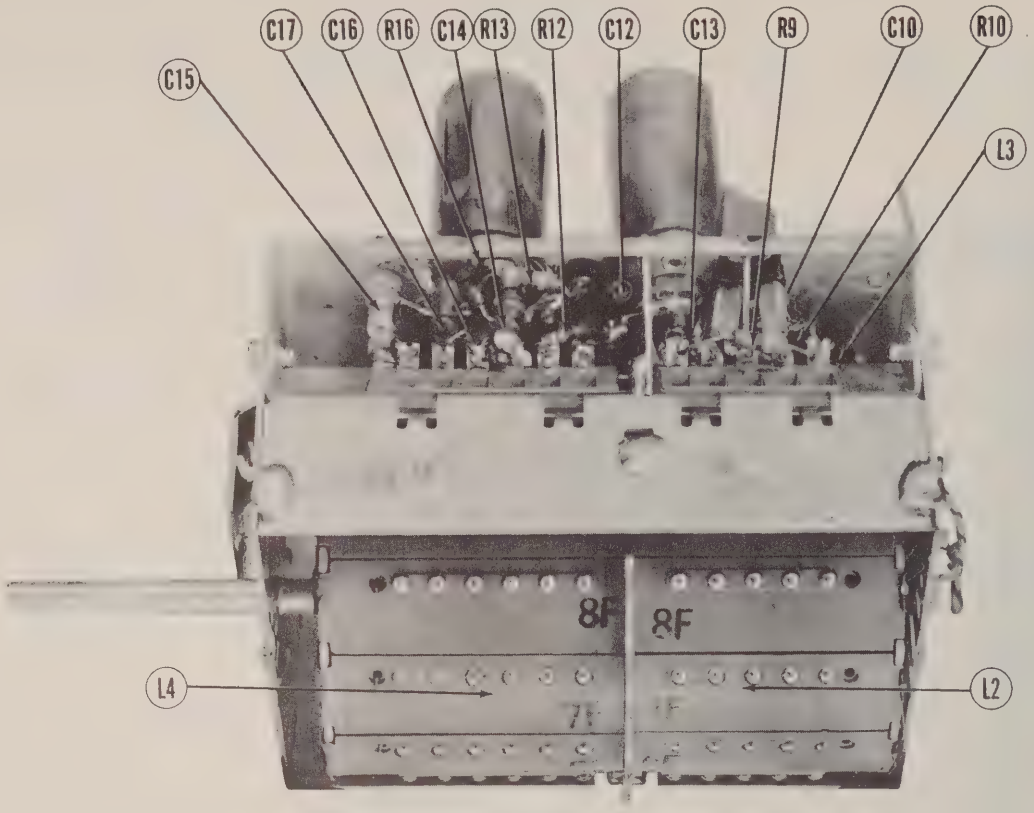
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	460KΩ	0Ω	.1Ω	0Ω	†5KΩ	†5KΩ	0Ω		
V 2	6J6	†7.5KΩ	†17KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	100KΩ	47Ω	.1Ω	0Ω	†3.9KΩ	†3.9KΩ	0Ω		
V 4	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 5	6CB6	15KΩ	180Ω	.1Ω	0Ω	†4.3KΩ	†4.3KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	0Ω	.1Ω	1Meg	0Ω	5.6KΩ		
V 7	12AT7	†11KΩ	5.6KΩ	.3Ω	.1Ω	.1Ω	†13KΩ	1Meg	22KΩ	0Ω
V 8	12AU7	†6KΩ	1Meg	3.1KΩ	.1Ω	.1Ω	†820KΩ	0Ω	47KΩ	0Ω
V 9	6AU6	†35KΩ	†2.8KΩ	0Ω	.1Ω	365KΩ	†1.3KΩ	†2.8KΩ		
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†3.8KΩ	†3.8KΩ	100Ω		
V 11	6AU6	2.6Ω	0Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	180Ω		
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	Inf.	11KΩ		
V 13	6AV6	10Meg	0Ω	.1Ω	0Ω	400KΩ	400KΩ	†550KΩ		
V 14	6AQ5	500KΩ	390Ω	0Ω	.1Ω	†2.8KΩ	†2.3KΩ	500KΩ		
V 15	6SN7GTA	†820KΩ	†9.5KΩ	3.3KΩ	2.5Meg 1Meg	#4Meg #1.5Meg	0Ω	0Ω	.1Ω	
V 16	6S4	Inf.	5.8KΩ 820Ω	1.8Meg	0Ω	.1Ω	1.8Meg	Inf.	Inf.	#7.8KΩ
V 17	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	27KΩ	Inf.	27KΩ		
V 18	6SN7GT	5.2Meg	†5.7KΩ	1.2KΩ	100KΩ 82KΩ	#380KΩ #225KΩ	1.2KΩ	0Ω	.1Ω	
V 19	6BG6G	Inf.	0Ω	150Ω	†52Ω	1Meg	1Meg	.1Ω	†7.5KΩ	Top Cap #18Ω
V 20	6W4GT	Inf.	#6.8KΩ	223KΩ	Inf.	†52Ω	#12Ω	#8Ω	#8Ω	
V 21	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #185Ω
V 22	5U4G	Inf.	12KΩ	Inf.	24Ω	Inf.	22Ω	Inf.	12KΩ	
V 23	20CP4	0Ω	1.1Meg	Pin 10 †600Ω	Pin 11 †195KΩ †120KΩ	Pin 12 .1Ω				

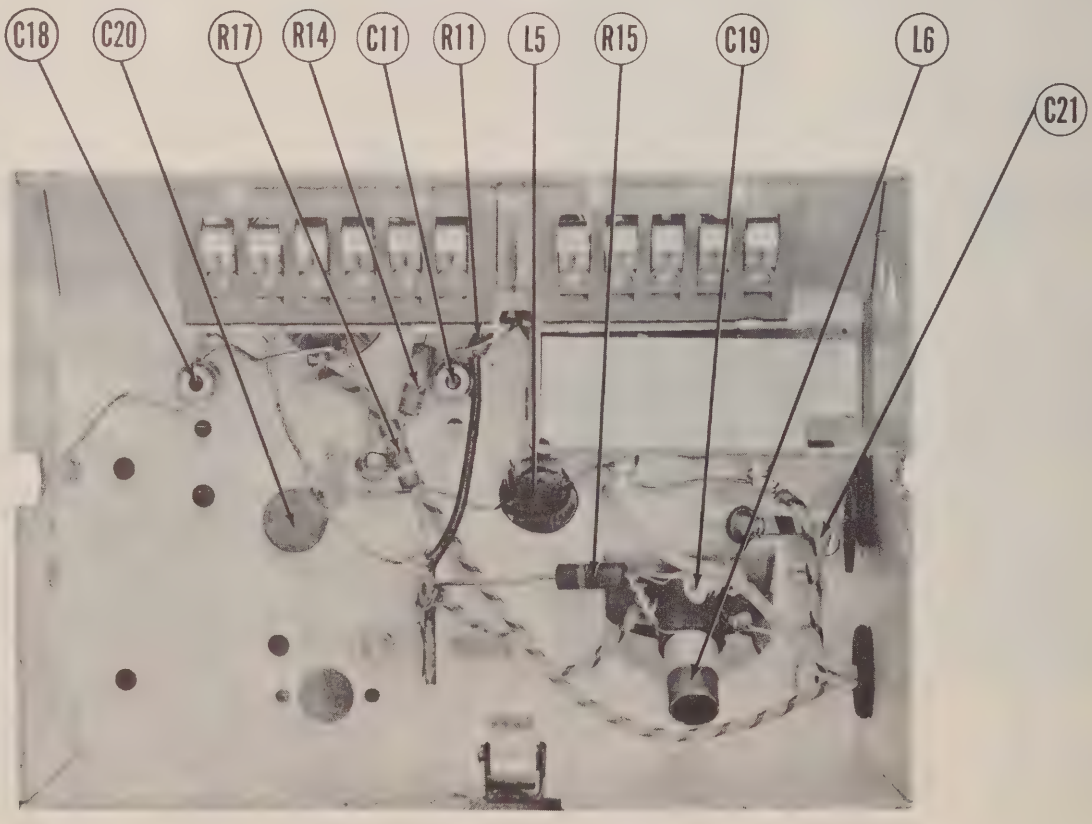
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
FOCUS CONTROL FULLY COUNTERCLOCKWISE.
TV - PHONO SWITCH IN TV POSITION.
* DO NOT MEASURE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* * USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE.

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED.
FOCUS CONTROL FULLY COUNTERCLOCKWISE.
TV-PHONO SWITCH IN TV POSITION.
† MEASURED FROM PIN 2 OF V22.
# MEASURED FROM PIN 3 OF V20.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		FIRESTONE PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6CB6	6CB6	6CK	
B	RF Amplifier	6BC5	6BC5	7BD	
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	6CK	
V4	2nd. Video IF Amp.	6CB6	6CB6	6CK	
V5	3rd. Video IF Amp.	6CB6	6CB6	6CK	
V6	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V7	1st. Video Amp.-Sync. Amplifier	12AT7	12AT7	9A	
V8	2nd. Video Amp.-Sync. Separater	12AU7	12AU7	9A	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
V15	Vert. Oscillator-Phase Inverter	6SN7GTA	6SN7GTA	8BD	
V16	Vertical Output	6S4	6S4	9AC	
V17	Horizontal Phase Detector	6AL5	6AL5	6BT	
V18	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6BG6G	6BG6G	5BT	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	FIRESTONE PART No.	SYLVANIA PART No.	THOMAS PART No.		
V23	20CP4	20CP4	20CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	80	450	45X376	AFH2-49		UP8445		TVL-2777	▲ Filter
B	30	450							▲ Filter
C2A	80	450	45X384	AFH2-66		UPT8045		TVL-2710	▲ Filter
B	40	50				V5			▲ Audio Output Cathode
C3A	80	450	45X376	AFH2-49		UP8445		TVL-2777	▲ Filter
B	30	450							▲ Vert. Output Decoupling
C4	20	450	45X382	PRS450/20		BR2045A		TVA-1709	Vert. Output Decoupling
C5A	10	450	45X385			UPT2150		TVL-1705	■ Aduio Output Decoupling
B	100	50				V10		TVA-1310	▲ Vert. Output Cathode
C6	5	25	45X378	PRS150/4		BR550		TVA-1203	Horiz. Output Cathode
C7	5	25	45X378	PRS150/4		BR550		TVA-1203	Sync. Amp. Cathode
C8	5	25	45X378	PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C9	4	100	45X361	PRS150/4		BR415		TVA-1402	AGC Filter
C10	3-9		31B-207		829-10				Variable Trimmer
C11	.5-3		31B-205		829-3				Variable Trimmer
C12	120		13B-033		TCN-120		N750L-121		RF Amp. Decoupling
C13	1000		13D-041	SI100	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C14	100		13D-046	SI100N750	TCN-100		N750L-101	5TCC-T1	RF Coupling
C15	.5-3		31B-205		829-3				Variable Trimmer
C16	20		13D-042	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C17	10		13D-064	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C18	.5-3		31B-206		829-3				Variable Trimmer
C19	10		13D-053	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C20A	1000		13D-071	BPD-2X001	DD-2-102		812-001	5HK-2D1	RF Bypass
B	1000								Conv. Filament
C21	120		13B-033		TCN-120		N750L-121		IF Coupling
C22	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C23	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C24	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Video IF Decoupling
C25	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Video IF Filament
C26	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C27	91	500			TCZ-91		NP0-333-910		Fixed Trimmer
C28	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	5TCC-Q47	IF Coupling
C29	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C30	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Decoupling
C31	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd Video IF Filament
C32	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C33	51	500		1469-00005	TCZ-51	5R5Q5	NP0-333-510		Fixed Trimmer
C34	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	5TCC-Q47	IF Coupling
C35	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Decoupling
C36	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Cathode
C37	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Filament
C38	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	Fixed Trimmer
C39	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C40	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	IF Coupling
C41	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Filament
C42	5		47X562	SI5NP0	TCZ-5		NP0K-050		Diode Load Cap.
C43	360	500	47X568	1469-00035	TCN-360		N750L-361		Fixed Trimmer
C44	68		47X599	SI68	D6-680	5R5Q7	GP1K-680	5GA-Q68	Video Coupling
C45	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling ‡
C46	.1	600	46X403	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C47	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling ‡
C48	.1	200	B65104	P288-1	DF-104	PTE4P1		2TM-P1	Picture Tube Cathode
C49	.015	600	F65153	P688-015		PTE6S15		6TM-S15	Vert. Sweep Coupling
C50	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Integrator Network
C51	1000	1000	47X569	1464-HV-001					Horiz. Sweep Coupling
C52	.25	200	B65254	P488-25		GT4P25		2TM-P25	AGC Filter
C53	.5	200	B65504	P288-5		GT2P5		2TM-P5	AGC Filter

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	1.5		47X584	SII-5NP0	TCZ-1.5		NP0K-1R5		Sound IF Coupling
C55	10000		47X595	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AVC Filter
C56	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st Sound IF Decoupling
C57	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C58	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Sound IF Decoupling
C59	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Sound IF Cathode
C60	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd Sound IF Filament
C61	470	500	47X525	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	RF Bypass
C62	470	500	47X535	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	De-emphasis
C63	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C64	.005	600	F65502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Compensation
C65	.01	200	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	AF Amp. Plate
C67	.01		†76X5	P688-01	†PC-80	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C68	.005	600	F65502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C69	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Audio Output Plate
C70	.1	400	D65104	P488-1	DF-104	PTE4P1		4TM-P1	Sync. Coupling
C71 A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Network
B	.005		♦76X7	P688-005	♦PC-100	PTE6D5	GP2-333-502	♦101C1	Vert. Integrator Network
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Network
C72	4700	500	47X543	1464-005	D6-472	1DR5D5	GP2-333-472	MS-25	Vert. Osc. Grid
C73	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C74	.25	400	D65254	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C75	1000		47X519	SII000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C76	1000		47X519	SII000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C77	.01	400	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AFC Filter
C78	.05	200	B65503	P288-05	DF-503	PTE4S5		2TM-S5	AFC Filter
C79	.005	600	F65502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Filter
C80	.25	200	B65254	P488-25		GT2P25		2TM-P25	AFC Filter
C81	.05	300	B65503	P288-05	DF-503	PTE4S5		3TM-S5	Horiz. MV Grid
C82	47	500	47X585	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	Horiz. MV Grid
C83	330	500	47X570	1469-00035	TCN-330		N750L-331		Horiz. MV Feedback
C84	4700	500	47X543						Fixed Trimmer
C85	.25	400	D65254	P488-25		GT4P25		4TM-P25	Horiz. MV Decoupling
C86	470	500	47X525	1469-0005	TCN-470	5R5T5	N750L-471	MS-35	Horiz. Discharge
C87	620	500	RCM20B621K						Horiz. Sweep Coupling
C88	130	500	RCM20A131K	1469-00015	TCN-130	5R5T15	N750L-131		Horiz. Output Grid
C89	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C90	1000		47X519	SII000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Output Screen
C91	.01	400	D65303	P488-03		PTE5S3		4TM-S3	Horiz. Sweep Coupling
C92	.25	400	D65254	P488-25		GT4P25		4TM-P25	Horiz. Sweep Coupling
C93	.05	400	D65503	P488-05	DF-503	PTE4S5		4TM-S5	Fixed Trimmer
C94	500	20000	47X560	HV20C	TV3-502				HV Filter
C95 A	10000		76X8	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	Line Filter
B	10000			BPD-01		1D3S1	821-01	5HK-S1	Line Filter
C96	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Osc. Grid ¶

† Items C67, R64A, R64B are combined in one unit.
♦ Items C71A, C71B, C71C, R77A, R77B, R77C are combined in one unit.
♦ Some models use .05MFD in this application (Mfgrs Part # D65503).
¶ Used in series B only.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
				Concentrikit			
R1A	3000Ω			B17-114 ♦ ♯			Contrast Control - Front
B	1Meg		78X6	B13-137X ♦			Volume Control - Tapped @ 200KΩ - Rear
C	Shaft End			E-302 ♦			Attach Per Instructions in Concentrikit
D	Switch			76-1 ♦			Attach Per Instructions in Concentrikit
R2A	25KΩ	½	40X336	QU-120	AG-40-5	B-26	Horizontal Hold Control
B	Shaft		Not Req	Not Req	KS8-3	Not Req.	Attach to R2A Per Instructions
R3A	500KΩ	½	40X333	QU-133	AG-58-5	B-59	Brightness Control
B	Shaft		Not Req.	Not Req.	KS8-3	Not Req.	Attach to R3A Per Instructions
R4A	5000Ω	½	40X294	QU-114	AM-19-5		Vertical Linearity Control
B	Shaft		Not Req.	PQ ♯	RS-2 ♯		Attach to R4A Per Instructions
C	Bushing		Not Req.	S-3 ♯	59-186 ♯		Attach to R4A Per Instructions
R5A	2.5Meg	½	40X293	QU-239	AG-84-5	AN-83	Height Control
B	Shaft		Not Req.	NQ	FKS-1/4	AK-1	Attach to R5A Per Instructions
R6	4000Ω	2	40X335				Focus Control - Wire Wound
R7A	1.5Meg	½	40X334	QU-138	AG-83-5	AN-75	Vertical Hold Control - See Note
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Attach to R7A Per Instructions
R8A	150KΩ	½	40X331		AG-52-5	B-44	Horizontal Drive Control
B	Shaft		Not Req.		FKS-1/4	Not Req.	Attach to R8A Per Instructions

Note Some models use 1Meg control in this application.
♦ Additional parts to be used with concentrikit.
♦ When making this replacement connect a BTS-8200 (IRC) between the two terminals that are used on the contrast control.
♯ Cut bushing and fashion shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE		RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	3900Ω		½	12A-046	BTS-3900	Antenna Coil Shunt
R10	47KΩ	20%	½	12A-039	BTS-47K	AGC Network
R11	2200Ω	20%	½	12A-049	BTS-2200	RF Amp. Decoupling
R12	10KΩ	20%	½	12A-040	BTS-10K	RF Coil Shunt
R13	4700Ω	20%	½	12A-042	BTS-4700	Mixer Grid
R14	220KΩ	20%	½	12A-041	BTS-220K	Mixer Grid
R15	15KΩ	20%	½	12A-021		Mixer Plate
R16	10KΩ		½	12A-040	BTS-10K	Osc. Grid
R17	4700Ω		½	12A-042	BTS-4700	Osc. Plate
R18	1000Ω		½	B85102	BTS-1000	AGC Network
R19	1000Ω		½	B85102	BTS-1000	AGC Network
R20	3900Ω	5%	½	B83392	BTS-3900-5%	1st Video IF Amp. Grid - See Note 8
R21	47Ω	5%	½	B83470		1st Video IF Amp. Cathode
R22	1000Ω		½	B85102	BTS-1000	1st Video IF Amp. Decoupling
R23	10KΩ	5%	½	B83103		2nd Video IF Amp. Grid - See Note 9
R24	47Ω	5%	½	B83470		2nd Video IF Amp. Cathode
R25	1000Ω		½	B84102	BTS-1000	2nd. Video IF Amp. Decoupling
R26	150Ω		½	B84151	BTS-150	Decoupling
R27	15KΩ	20%	½	B83153	BTS-15K	3rd Video IF Amp. Grid - See Note 9

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R28	180Ω	½	B84181	BTS-180	3rd Video IF Amp. Cathode
R29	1500Ω	½	B85152	BTS-1500	3rd. Video IF Amp. Decoupling
R30	22KΩ	½	B84223	BTS-22K	Plate Choke Shunt
R31	2700Ω	5% 1	C83272	BTA-2700-5%	Voltage Divider
R32	33KΩ	½	B84333	BTS-33K	AGC Keying Grid
R33	47KΩ	½	B84473	BTS-47K	AGC Network
R34	820KΩ	½	B84824	BTS-820K	Voltage Divider - See Note 11
R35	22KΩ	½	B84223	BTS-22K	Diode Load
R36	47KΩ	½	B84473	BTS-47K	AGC Network
R37	200KΩ	5% ½			AGC Network - See Note 10
R38	100KΩ	½	B85104	BTS-100K	AGC Network
R39	5600Ω	½	B84562	BTS-5600	Video Det Diode Load
R40	5600Ω	½	B84562	BTS-5600	1st Video Amp. Plate - See Note 4
R41	1Meg	20% ½	B85105	BTS-1Meg	2nd Video Amp. Grid
R42	100Ω	½	B84101	BTS-100	2nd Video Amp. Cathode
R43	4700Ω	5% 1	C83472	BTA-4700	2nd Video Amp. Plate
R44	10KΩ	5% ½	B83103	BTS-10K-5%	Isolation
R45	1Meg	20% ½	B85105	BTS-1Meg	DC Restorer Diode Load
R46	2200Ω	20% ½	B85222	BTS-2200	Vert. Retrace Blanking Network
R47	47KΩ	½	B84473	BTS-47K	Voltage Divider
R48	100KΩ	½	B85104	BTS-100K	Picture Tube Grid
R49	22KΩ	½	B84223	BTS-22K	Picture Tube Cathode
R50	100KΩ	½	B84104	BTS-100K	Picture Tube Cathode
R51	100Ω	½	B84101	BTS-100	1st. Sound IF Amp. Cathode
R52	1000Ω	½	B84102	BTS-1000	1st. Sound IF Amp. Decoupling
R53	180Ω	½	B84181	BTS-180	2nd. Sound IF Amp. Cathode
R54	1000Ω	½	B84105	BTS-1000	2nd. Sound IF Amp. Decoupling
R55	5600Ω	½	B84562	BTS-5600	Ratio Det. Diode Load
R56	5600Ω	½	B84562	BTS-5600	Ratio Det. Diode Load
R57	120Ω	½	B84121	BTS-120	Balancing
R58	68KΩ	½	B84683	BTS-68K	De-emphasis
R59	470KΩ	½	B84474	BTS-470K	AVC Network
R60	100KΩ	½	B84104	BTS-100K	AVC Network See Note 2
R61	68KΩ	½	B84683	BTS-68K	Tone Compensation
R62	10Meg	20% ½	B85106	BTS-10Meg	AF Amp. Grid
R63	47KΩ	½	B84473	BTS-47K	AF Amp. Plate Decoupling
R64A	500KΩ	½	76X5 †	BTS-470K	AF Amp. Plate
B	500KΩ	½		BTS-470K	Output Grid
R65	390Ω	1	C84391	BTA-390	Output Cathode
R66	1000Ω	2	B84102	BTB-1000	Output Decoupling
R67	10KΩ	½	B84103	BTS-10K	Isolation
R68	1Meg	20% ½	B85105	BTS-1Meg	Sync. Amp. Grid
R69	22KΩ	½	B84223	BTS-22K	Sync. Amp. Cathode
R70	12KΩ	½	B84123	BTS-12K	Sync. Amp. Plate
R71	2200Ω	½	B84222	BTS-2200	Isolation
R72	47KΩ	½	B84473	BTS-47K	Sync. Sep. Cathode
R73	820KΩ	½	B84824	BTS-820K	Sync. Sep. Plate
R74	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Cathode
R76	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Plate
R76	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Plate
R77A	22KΩ	½	76X7 ♦	BTS-22K	Integrator
B	8200Ω	½		BTS-8200	Integrator
C	8200Ω	½		BTS-8200	Integrator
R78	1Meg	½	B84105	BTS-1Meg	Vert. Osc. Grid - See Note 12
R79	1.5Meg	½	B84155	BTS-1.5Meg	Vert. Osc. Plate
R80	4700Ω	5% ½	B83472	BTS-4700-5%	Vert. Peaking
R81	1.8Meg	½	B84185	BTS-1.8Meg	Vert. Output Grid
R82	820Ω	½	B84821	BTS-820	Vert. Output Cathode
R83	6800Ω	2	D84682	BTB-6800	Decoupling
R84	470KΩ	½	B84474	BTS-470K	Bleeder
R85	470KΩ	½	B84474	BTS-470K	Bleeder
R86	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Diode Load
R87	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Diode Load
R88	4.7Meg	20% ½	B85475	BTS-4.7Meg	Horiz. Phase Det. Diode Load
R89	27KΩ	½	B84273	BTS-27K	Horiz. Phase Det. Diode Load
R90	15KΩ	1	C84153	BTA-15K	Horiz. Feedback
R91	470KΩ	½	B84474	BTS-470K	Horiz. AFC Filter
R92	33KΩ	½	B84333	BTS-33K	Horiz. AFC Filter
R93	1200Ω	½	B84122	BTS-1200	Horiz. MV Cathode
R94	5600Ω	½	B84562	BTS-5600	Horiz. MV Plate
R95	82KΩ	½	B84823	BTS-82K	Horiz. MV Grid
R96	180KΩ	½	B84184	BTS-180K	Horiz. MV Plate
R97	47KΩ	20% ½	B84473	BTS-47K	Horiz. MV Decoupling
R98	10KΩ	½	B84103	BTS-10K	Horiz. Peaking
R99	150Ω	½	B84151		Parasitic Suppressor
R100	1Meg	½	B84105	BTS-1Meg	Horiz. Output Grid
R101	150Ω	5	43X263	1 3/4A-150	Horiz. Output Cathode - Wire Wound
R102	7500Ω	15	43X256	2D-7500	Horiz. Output Screen - Wire Wound
R103	5.1Ω	½	43X239	BW-½-5.1	HV Rectifier Filament - Wire Wound
R104	1Meg	20% 1	C85105		HV Filter
R105	10KΩ	5	43X247	1 3/4A-10K	Bleeder - Wire Wound
R106	1500Ω	15	43X261	2D-1500	Voltage Divider - Wire Wound
R107	500Ω	10	43X245	1 3/4A-500	Voltage Divider - Wire Wound - See Note 6
R108	1500Ω	15	43X261	2D-1500	Focus Coil Shunt - Wire Wound - See Note 7
R109	2.2Meg	½		BTS-2.2Meg	Voltage Divider - See Note 2
R110	180KΩ	½		BTS-180K	Voltage Divider - See Note 2
R111	470KΩ	½		BTS-470K	Vert. Osc. Coil Shunt - See Note 2

† Items R64A, R64B, and C67 are combined into one unit.
♦ Items R77A, R77B, R77C, C71A, C71B, and C71C are combined into one unit.
Note 2 Not used in all models.
Note 3 Some models use 220KΩ resistor in this application.
Note 4 Some models use parallel resistors in this application to obtain desired value.
Note 5 In models not employing a Focus Coil R108 becomes a Filter resistor.
Note 6 Some models use 250Ω resistor in this application.
Note 7 Some models use 1000Ω resistor in this application.
Note 8 Some models use 8200Ω resistor in this application.
Note 9 Some models use 22KΩ resistor in this application.
Note 10 Some models use 390KΩ resistor in this application.
Note 11 Some models use 3.9Meg resistor in this application.
Note 12 Some models use 1.5Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 2.1A	750VCT .250ADC	5VAC ② 3A	6.3VAC ② 8A	53X318		P-3059	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1.15KΩ	54X7	A-8122 ①	A-3000 ①	TBO-2 ①	Vert. Block Osc. Trans.
T3	185Ω Tap 12Ω	10.5Ω Taps .4Ω 3.4Ω and 5Ω	53X319		HV0-7 and MWC-1		Horiz. Output Trans.
		SEC. 2 4.9Ω					
		SEC. 3 0Ω					
T4	1KΩ Tap 12Ω		51X151	A-8122 ①	A-3-37 ①	TBO-5 ①	Vert. Output Trans.
T5A	18Ω		9A2194	DY-8	MDF-70		Horiz. Deflection Coils
B	50Ω						Vert. Deflection Coils
T6	820Ω		9A2220				Focus Coil

① Drill one new mounting hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.5KΩ	3.2Ω	465Ω	.2Ω	51X150	A-3823 ①	A-2930	RO-9 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA FIRESTONE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	3.2Ω	12A502	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 3/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250A	52Ω	2 Henries	52X88	C-2326	C-2991	TR-3300①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA FIRESTONE PART No.	NOTES
L2	Ant. Coils	0Ω	0Ω	9A2119	Channel #2
L3	Fil. Choke	0Ω			
L4	RF Mixer Grid and Osc. Coil	0Ω		9A2131	Channel #2
L5	Fil. Choke	0Ω			
L6	1st Video IF	.7Ω		31A-095	
L7	Fil. Choke	0Ω		9A2033	
L8A	2nd Video IF	.3Ω		9A2165	Includes Trap (Some models do not use trap)
B	2nd Video IF			9A2225	Alternate
L9	Fil. Choke	0Ω		9A2033	
L10A	3rd Video IF	.3Ω		9A2166	Includes Trap (Some models do not use trap)
B	3rd Video IF			9A2225	Alternate
L11	Fil. Choke	0Ω		9A2033	
L12	Sound Trap	0Ω	.1Ω	9A2169	Not used in all models.
L13	RF Choke	2.8Ω		9A1979	
L14A	4th Video IF	.2Ω		9A2167	Includes Trap.
B	4th Video IF			9A2226	Alternate
L15	Peaking	10Ω		36A1	100 Microhenries (yellow dot)
L16	Peaking	35Ω		36A5	750 Microhenries (green dot)
L17	Peaking	16Ω		36A7	190 Microhenries Wound on 22KΩ Resistor (orange dot)
L18	Peaking	16Ω	36A4	36A4	215 Microhenries Wound on 2.2KΩ Resistor (red dot)
L19	4.5MC Trap	.3Ω		9A2074	
L20	Peaking	15Ω		36A8	185 Microhenries Wound on 47KΩ Resistor (brown dot)
L21	Peaking	15Ω		36A2	190 Microhenries (white dot)
L22	1st Sound IF	2.8Ω		9A2168	
L23	2nd Sound IF	2.8Ω	2.6Ω	9A2170	
L24	Ratio Det. Trans.	2.8Ω	.3Ω	9A2171	Tap .8Ω
L25	Horiz. Osc.	50Ω		9A2096	
L26	Width Coil			9A2183	
L27	Horiz. Lin.	4.4Ω		9A2172	Tap 1.5Ω

FIRESTONE MODEL 13-G-56

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

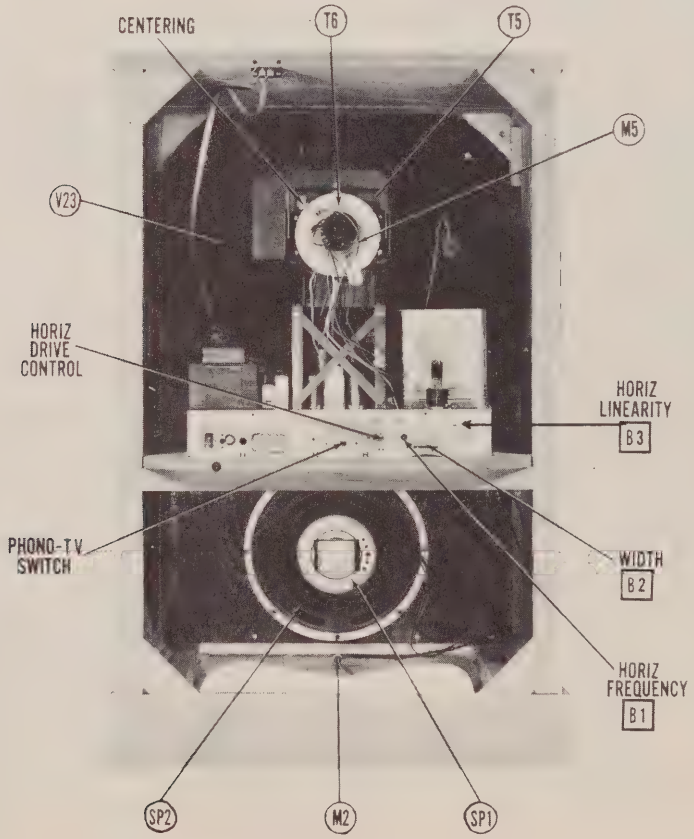
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			FIRESTONE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo Blo	.250A	16X147	16X146	313.250	357001	

DIAL LIGHTS

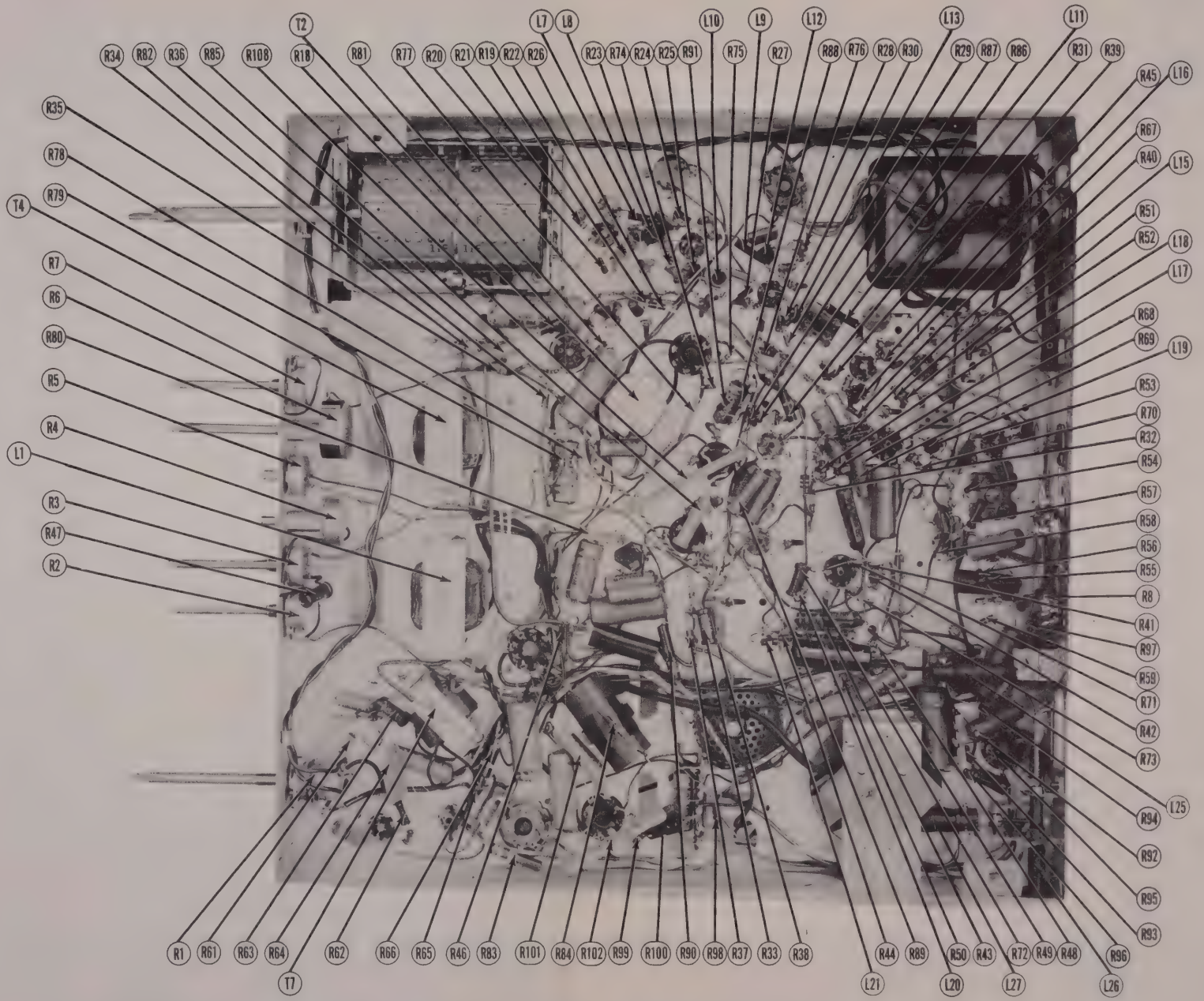
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					FIRESTONE PART No.		
M2	Bayonet	75	.2	White	7A32		Type # 51

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	RF Tuner	25A1086	
M4	Switch	2A402	TV-Phono
M5	Ion Trap	2A407	
	Ant. Coil	9A2120	Channel # 3
		9A2121	Channel # 4
		9A2122	Channel # 5
		9A2123	Channel # 6
		9A2124	Channel # 7
		9A2125	Channel # 8
		9A2126	Channel # 9
		9A2127	Channel # 10
		9A2128	Channel # 11
		9A2129	Channel # 12
		9A2130	Channel # 13
	RF Mix. Grid and Osc. Coil	9A2132	Channel # 3
		9A2133	Channel # 4
		9A2134	Channel # 5
		9A2135	Channel # 6
		9A2136	Channel # 7
		9A2137	Channel # 8
		9A2138	Channel # 9
		9A2139	Channel # 10
		9A2140	Channel # 11
		9A2141	Channel # 12
		9A2142	Channel # 13



CABINET-REAR VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

GENERAL ELECTRIC
MODEL 24C101

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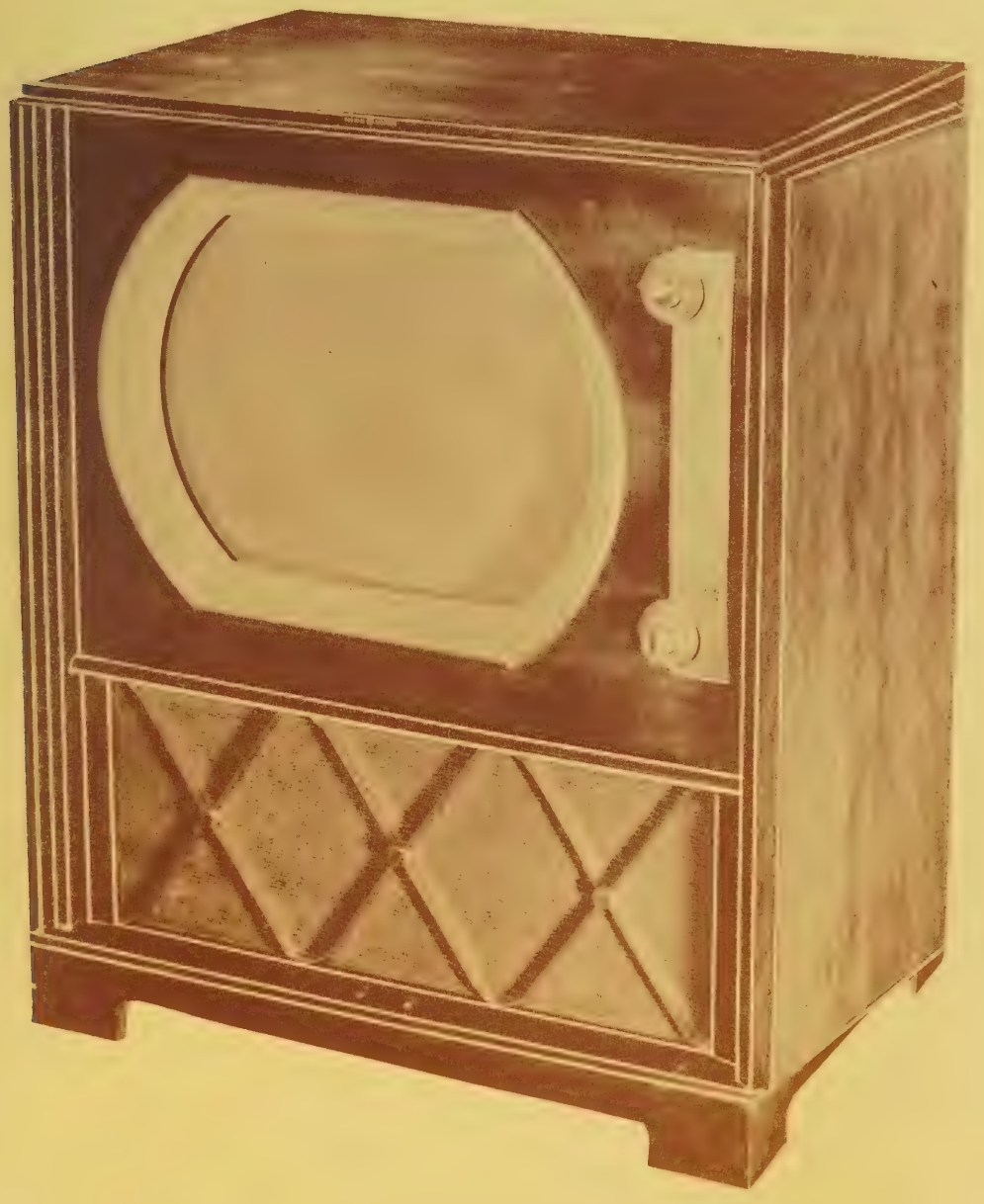

GENERAL ELECTRIC
MODEL 24C101

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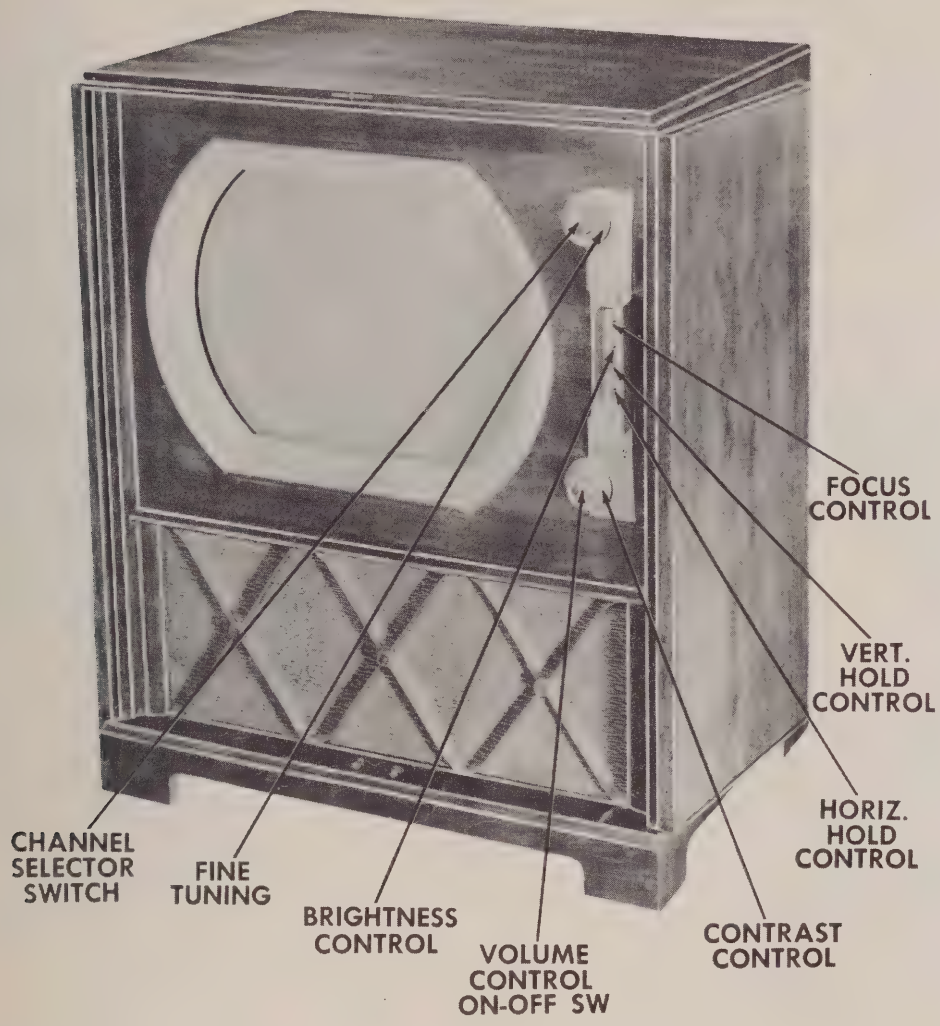
GENERAL ELECTRIC MODEL 24C101



GENERAL ELECTRIC MODEL 24C101

TRADE NAME	General Electric, Model 24C101
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty nine
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 3.25 Amp. at 117 Volts AC
TUNING RANGE	CHANNELS 2 thru 13

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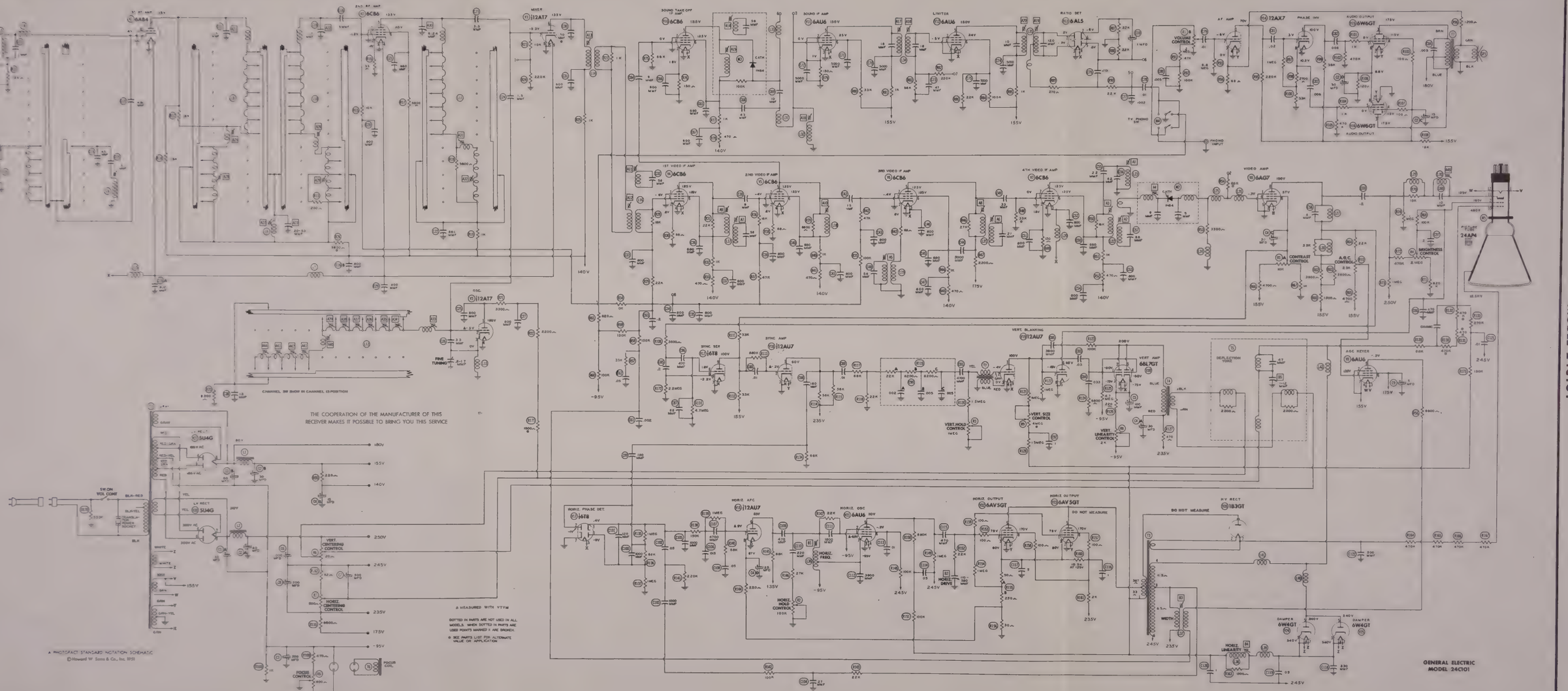
GENERAL ELECTRIC
MODEL 24C101
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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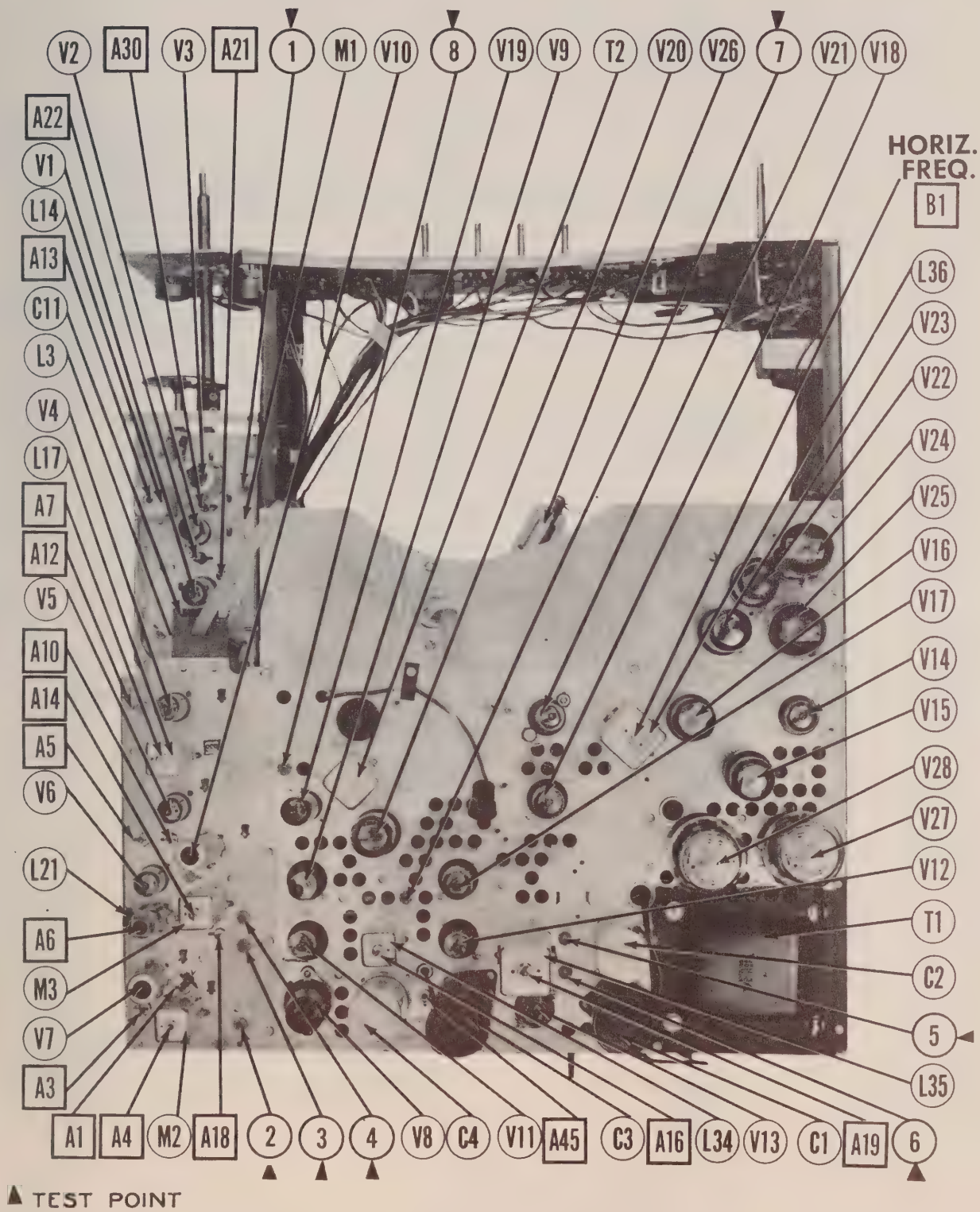
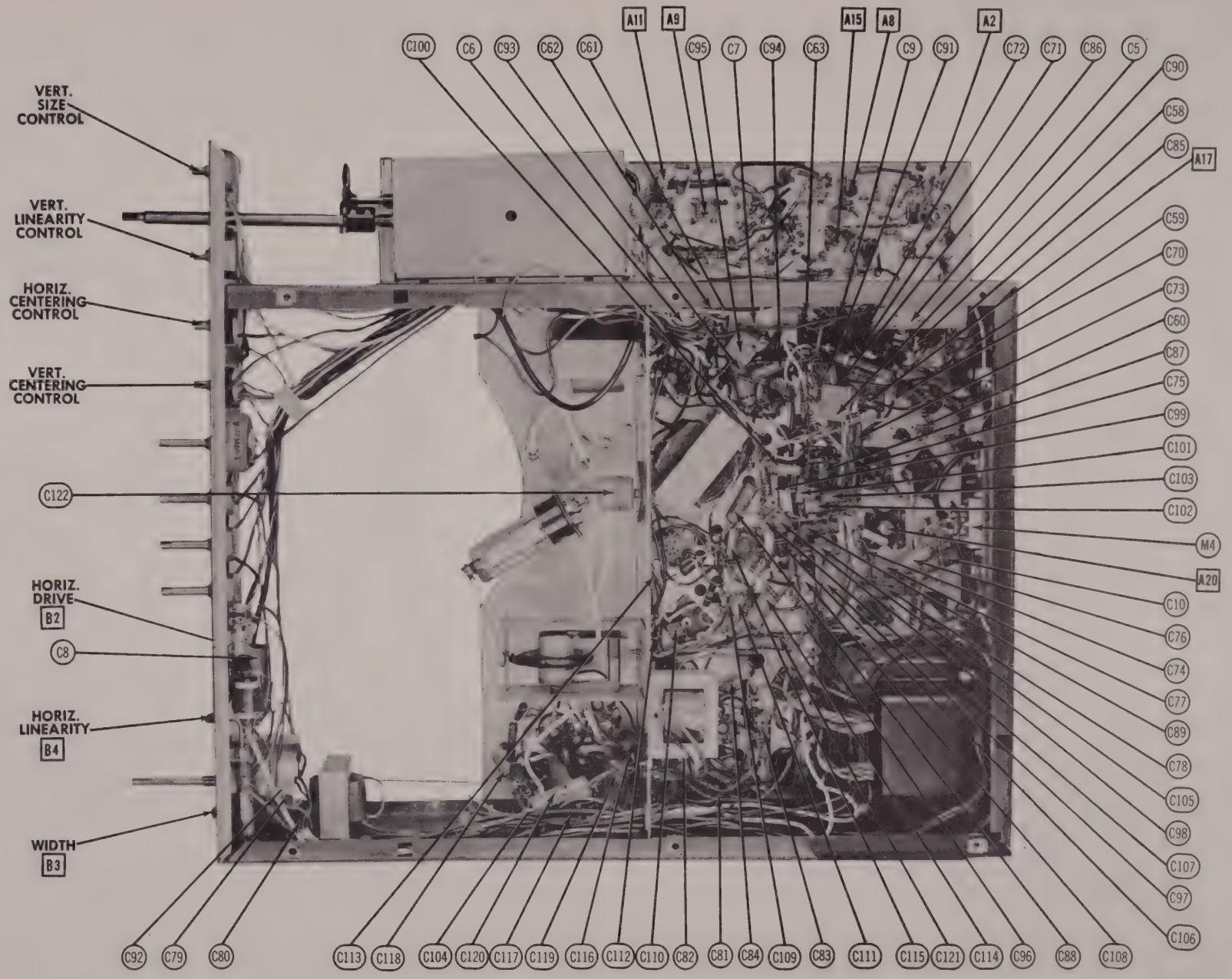
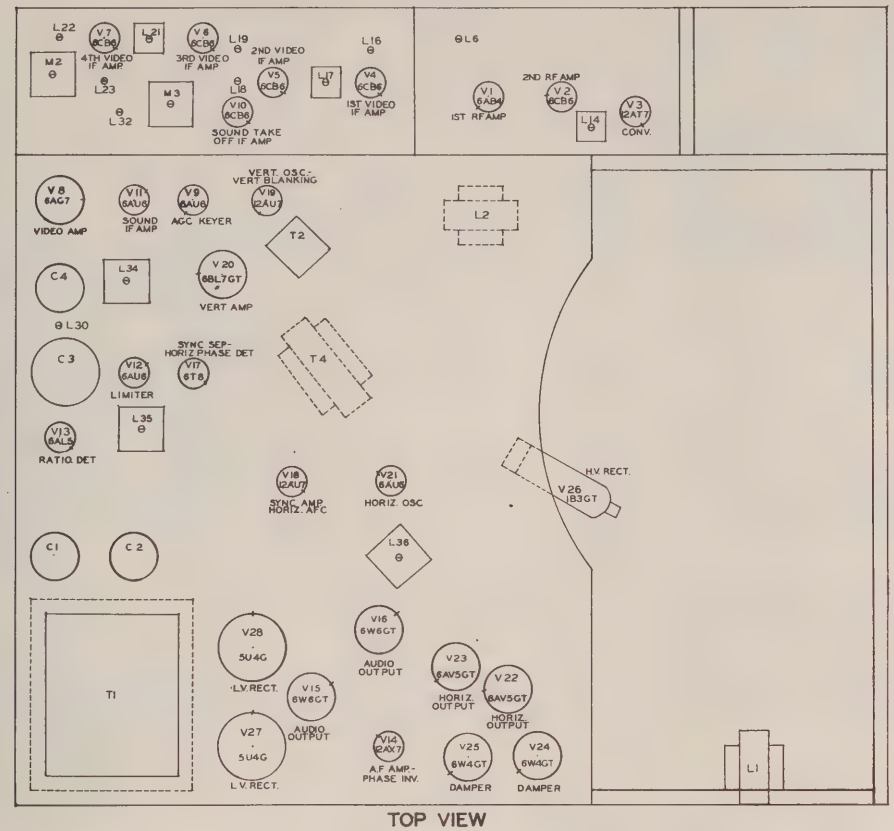


▲ TEST POINT

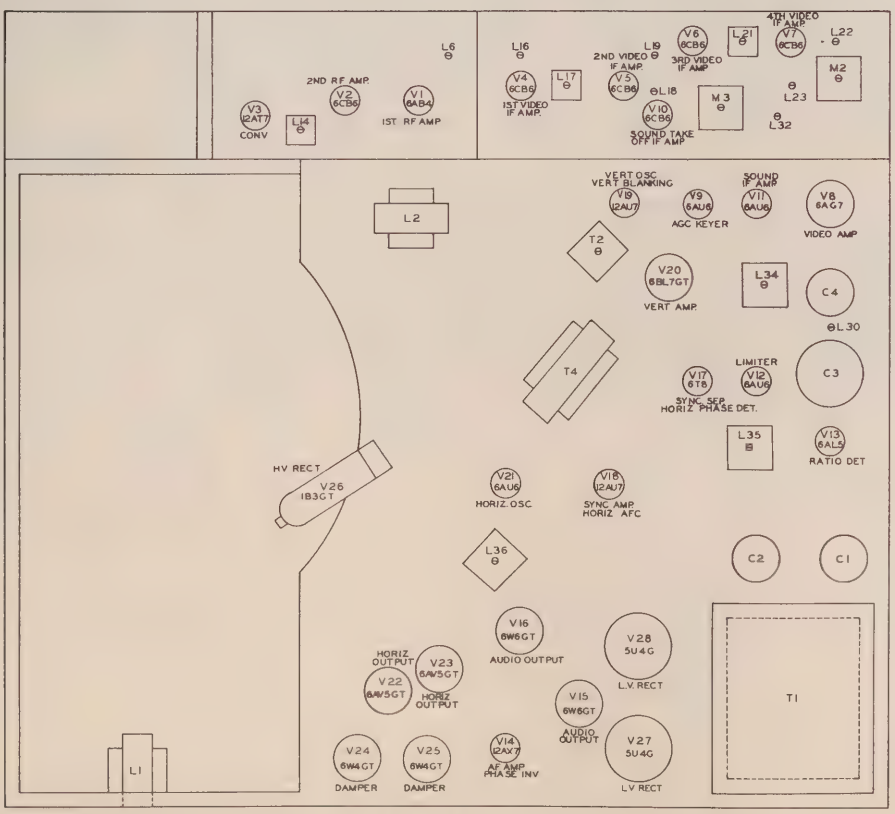
CHASSIS TOP VIEW


VERT. SIZE CONTROL
VERT. LINEARITY CONTROL
HORIZ. CENTERING CONTROL
VERT. CENTERING CONTROL
C122
HORIZ. DRIVE B2
C8
HORIZ. LINEARITY B4
WIDTH B3
C92 C79 C80
C113 C118 C104 C120 C117 C119 C116 C112 C110 C82 C81 C84 C109 C83 C111 C115 C121 C114 C96 C88 C108
C106 C97 C107 C98 C105 C78 C89 C77 C74 C76 C10 A20 M4 C102 C103 C101 C99 C75 C87 C60 C73 C70 C59 A17 C85 C58 C90
C100 C6 C93 C62 C61 A11 A9 C95 C7 C94 C63 A15 A8 C9 C91 A2 C72 C71 C86 C5

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Do not operate this receiver without the focus coil and deflection yoke plugs connected.
The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V21), from its socket.

VIDEO IF ALIGNMENT

The video IF bottom shield must be in place before alignment is attempted.
To make connection to the grids of the various tubes, bend a hook on the end of one lead of a 100MMF mica capacitor. The hook is slipped over pin 1 of the tube and the tube replaced. The sweep generator is connected to the free end of the capacitor. Take care to prevent the hooked end of the capacitor shorting against the chassis.
During step 4, a 5 microhenry choke must be connected in series with the 100MMF capacitor to prevent an erroneous tilt in the response curve.
Connect the negative lead of a 3 volt battery to test point # 8, connect the positive lead to chassis.
Set the tuner on a channel which causes no spurious interference with the response curve. To check for interference turn the fine tuning control, if the response curve changes switch to another channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	100MMF.	High side to pin 1, (Grid), of 6CB6, (V7). Low side to chassis.	44MC (10MC SWP)	39.75MC 41.25MC 42MC 45.75MC	See instructions above	Vert. Amp. to test Point # 2. Low side to chassis.	A1, A2, A3, A4	Adjust A1 for MINIMUM marker indication at the 39.75MC point on response curve. Adjust A2 for MINIMUM 41.25MC marker. Adjust A3 and A4 to place 42MC marker and 45.75MC marker as shown in figure 1.
2.	"	High side to pin 1, (Grid), of 6CB6, (V4). Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A5, A6, A7	Adjust A5 for MINIMUM marker indication at the 39.75MC point on response curve. Adjust A6 for MINIMUM 41.25MC marker and A7 for MINIMUM 47.25MC marker.
3.	"	"	"	42MC 45MC 45.75MC	"	"	A8, A9, A10	Adjust A8 to place 42MC marker as shown in figure 2. Adjust A9 to place 45.75MC marker and A10 to adjust the tilt of the response curve
4.	100MMF. and 5 microhenry choke in series.	High side thru dummy to test point # 1. Low side to chassis.	"	39.75MC 41.25MC 42MC 45MC 45.75MC 47.25MC	"	"	A11, A12, A13	Adjust A11 for MINIMUM marker indication at the 47.25MC point on response curve. Adjust A12 and A13 for maximum amplitude of response with markers as shown in figure 3.

SOUND TAKEOFF IF AMPLIFIER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	100MMF. and 5 microhenry choke in series.	High side thru dummy to test point # 1. Low side to chassis.	44MC (10MC SWP)	41.25MC 45.75MC 47.25MC	See instructions above video IF alignment.	Vert. Amp. thru 10KΩ to test point # 4. Low side to chassis.	A14, A15	Adjust A14 for MINIMUM marker indication at the 47.25MC point on response curve. Adjust A15 for 7 to 1 amplitude ratio of markers as shown in figure 4. The response curve may vary considerably from that shown, however the important point is the 7 to 1 ratio between the marker amplitudes.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	100MMF.	High side to test point # 3. Low side to chassis.	4.5MC (2MC SWP)	4.5MC	Any channel not used locally	Vert. Amp. to test point # 7. Low side to chassis.	A16, A17	Adjust for maximum amplitude and symmetry as per figure 5.
7.	100MMF. and 15KΩ in series	High side thru dummy to test point # 4. Low side to chassis.	"	"	"	"	A18	"
8.	"	"	"	"	"	Vert. Amp. to test point # 5. Low side to chassis.	A19, A20	Adjust A19 so 4.5MC occurs at center of "S" curve as per figure 6. Adjust A20 for maximum amplitude and straightness of diagonal line.

RF ALIGNMENT

RF alignment is performed in 2 operations. In the first operation the cathode and plate circuits of the first RF amp., and the grid circuit of the second RF amp are aligned. During this operation B+ voltages are removed from V2 and both sections of V3. The grid circuit of V2 is used as a detector to rectify the signal.
In the second operation the plate circuit of the second RF amplifier is aligned. During this operation B+ voltage is reconnected to V2 and the converter section of V3. The oscillator section of V3 is left disabled. See figure 8 for B+ connection terminal strip.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	See Fig. 7	Across antenna terminals	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to AGC terminal on tuner terminal strip, (fig. 8). Low side to chassis.	A21, A22, A23	Disconnect B+ from second RF amp. (V2), and converter section of (V3). Disconnect B+ from oscillator section of (V3). Disconnect AGC buss from V2 and connect a 470KΩ resistor between AGC terminal and tuner chassis. (see fig. 8). Adjust A21 and A22 to place markers as shown in figure 9. Adjust A23 for proper band width. There are two points of proper band width on A23. The correct one gives a slightly wider response on channel 12.
10.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check for response curve within the limits of figures 10A and 10B. If necessary make compromise adjustment of A21 and A22 to bring channels 13 thru 7 within the limits of fig. 10.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
11.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A24, A25, A26, A27	Adjust A24, A25 and A26 for proper marker placement as shown in figure 9. Adjust A27 for proper band width.
12.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5			Check for response curve within the limits of figures 10A and 10B. If necessary make compromise adjustment of A25, and A26 to bring channels 6, 5, and 4 within the limits of fig. 10
			69MC (10MC SWP)	67.25MC 71.75MC	4			

ALIGNMENT INSTRUCTIONS (CONT.)

13.	"	"	63MC (10MC SWP)	61.25MC 65.75MC	3	"	A28, A29	Adjust for response curve similar to figure 9.
14.	"	"	57MC (10MC SWP)	55.25MC 59.75MC	2	"		Check for response curve similar to figure 9. If necessary make compromise adjustments of A28 and A29 to obtain best response on channels 3 and 2.
15.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to test point # 1. Low side to chassis.	A30	Reconnect B+ to second RF amp. and converter but do not reconnect osc. B+. Remove the 470KΩ resistor and reconnect the AGC buss, and connect 3 volt bias as during video IF alignment. Adjust A30 for flattopped response similar to figure 11.
16.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check for response curve within the limits of figures 10A and 10B. If necessary make compromise adjustment of A30 to bring channels 12 thru 7 within the limits of fig. 10.
			201MC (10MC SWP)	199.25MC 203.57MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
17.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A31	Adjust for flattopped response similar to figure 11.
18.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check for response curve within the limits of figure 10A and 10B. If necessary make compromise adjustment of A31 to bring channels 6, 5, and 4 within the limits of figure 10.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
19.	"	"	63MC (10MC SWP)	61.25MC 65.75MC	3	"	A32	Adjust for flattopped response similar to fig. 11.
20.	"	"	57MC (10MC SWP)	55.25MC 59.75MC	2	"		Check for response similar to figure 11. If necessary make compromise adjustment of A32 to obtain best response on channels 3 and 2.

OSCILLATOR ALIGNMENT

Reconnect the B+ to the oscillator section of V3.
Leave the 3 volt bias connected.
Turn the fine tuning control counter-clockwise to the stop, and then one half turn clockwise.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
21.	See fig. 7	Across antenna terminals	213MC (10MC SWP)	211.25MC	13	Vert. Amp. to test point # 2. Low side to chassis.	A33	Adjust to place video marker at 50% on high frequency slope of response curve as per figure 12.
			207MC (10MC SWP)	205.25MC	12		A34	
			201MC (10MC SWP)	199.25MC	11		A35	
			195MC (10MC SWP)	193.25MC	10		A36	
			189MC (10MC SWP)	187.25MC	9		A37	
			183MC (10MC SWP)	181.25MC	8		A38	
			177MC (10MC SWP)	175.25MC	7		A39	
			85MC (10MC SWP)	83.25MC	6		A40	
			79MC (10MC SWP)	77.25MC	5		A41	
			69MC (10MC SWP)	67.25MC	4		A42	
			63MC (10MC SWP)	61.25MC	3		A43	
			57MC (10MC SWP)	55.25MC	2		A44	

4.5MC TRAP ADJUSTMENT

If 4.5MC beat interference appears in the picture, (grain appearence in horizontal lines), adjust the 4.5MC trap, (A45), minimize the interference.

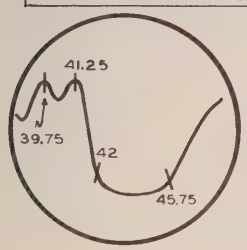


FIG. 1

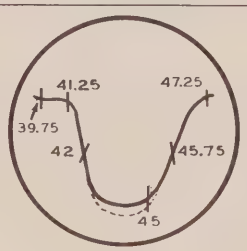


FIG. 2

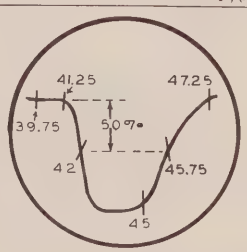


FIG. 3

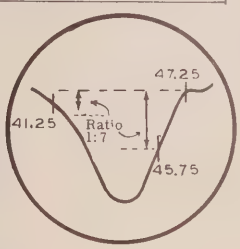


FIG. 4

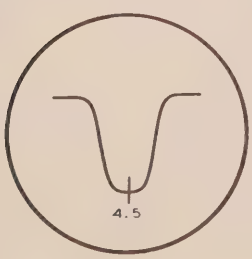


FIG. 5

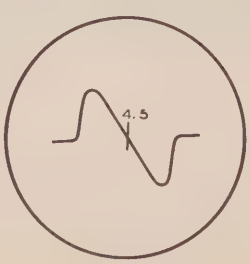
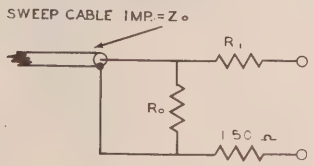


FIG. 6



Z_0	R_0	R_1
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω
92Ω	110Ω	100Ω

FIG. 7

ALIGNMENT INSTRUCTIONS (CONT.)

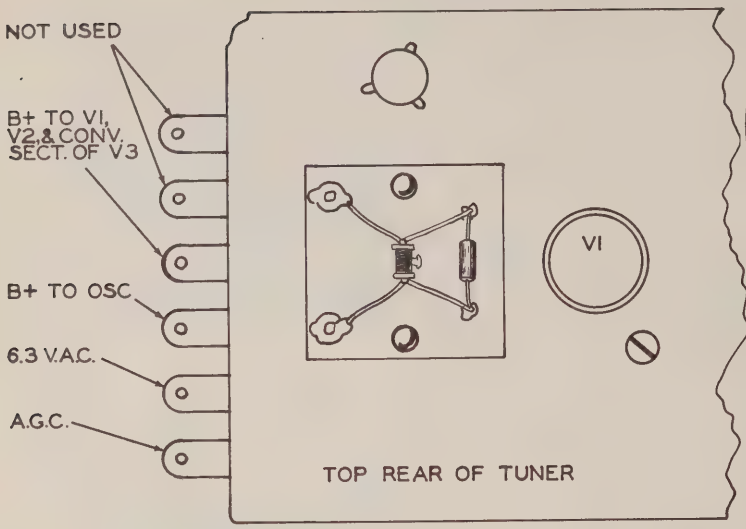


FIGURE 8

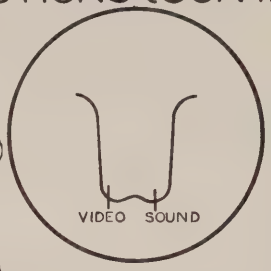


FIG. 9

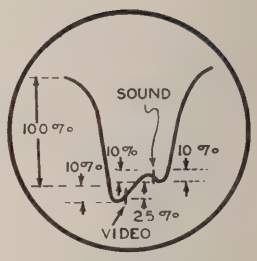


FIG. 10A

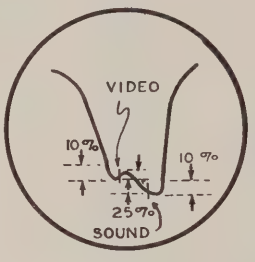


FIG. 10B

FIG. 11

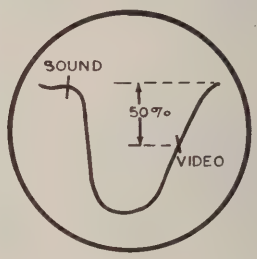
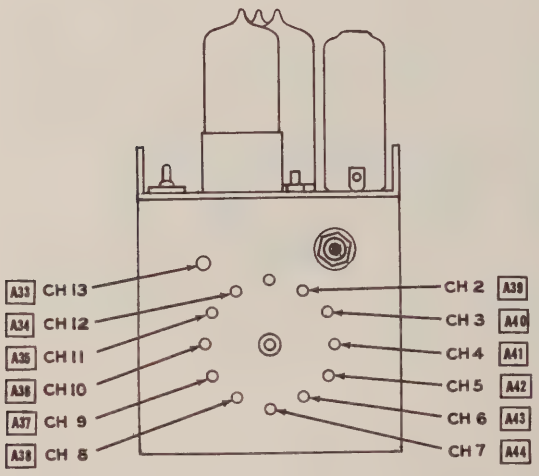
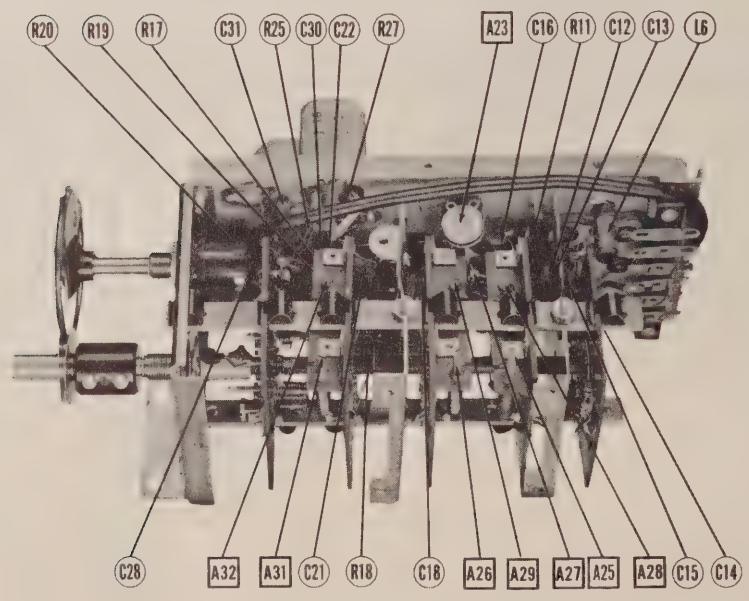


FIG. 12



OSCILLATOR ADJUSTMENTS



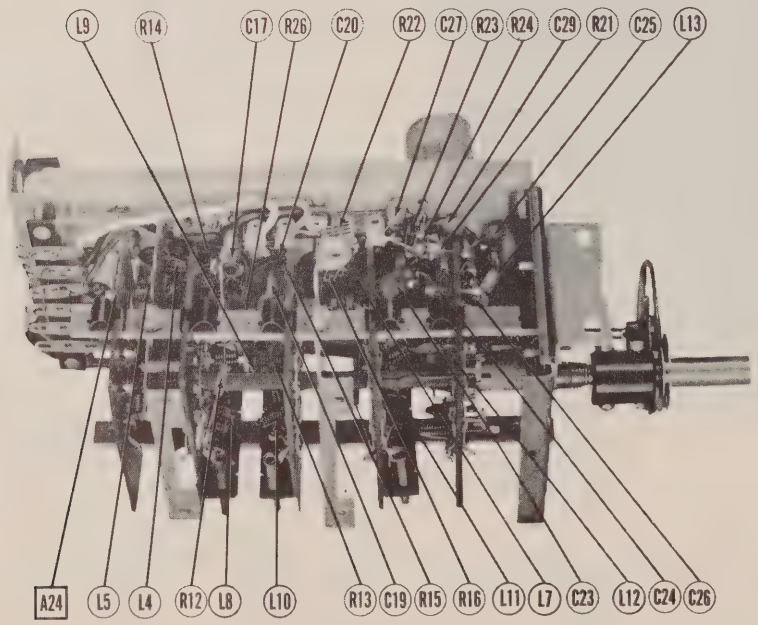
RF TUNER - RIGHT SIDE

RESISTANCE MEASUREMENTS

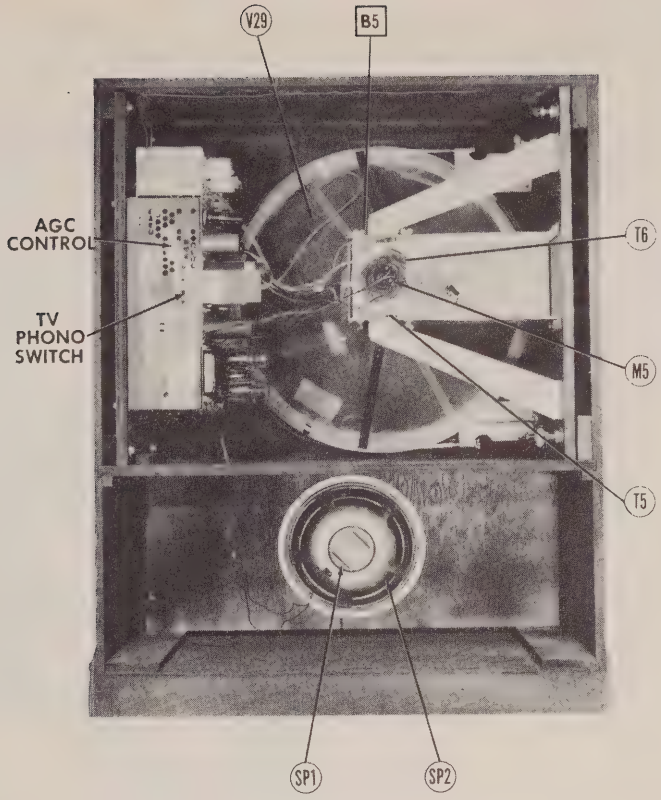
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AB4	†5.6KΩ	0Ω	.1Ω	0Ω	†460Ω	0Ω	120Ω		
V 2	6CB6	170KΩ	33Ω	0Ω	.3Ω	†1.4KΩ	†7.2KΩ	0Ω		
V 3	12AT7	▲7.3KΩ	8.2KΩ	.2Ω	0Ω	0Ω	†1.4KΩ	230KΩ	0Ω	.3Ω
V 4	6CB6	170KΩ	68Ω	.1Ω	0Ω	†1.9KΩ	†1.9KΩ	0Ω		
V 5	6CB6	215KΩ	68Ω	.1Ω	0Ω	†1.9KΩ	†1.9KΩ	0Ω		
V 6	6CB6	300KΩ	68Ω	.1Ω	0Ω	▲9.2KΩ	†1.9KΩ	0Ω		
V 7	6CB6	33KΩ	150Ω	.2Ω	0Ω	†1.9KΩ	†1.9KΩ	0Ω		
V 8	6AG7	0Ω	.1Ω	0Ω	3.3KΩ	0Ω	†45KΩ	0Ω	†4.2KΩ	
V 9	6AU6	†12KΩ	†240Ω	■0Ω	■.2Ω	300KΩ	▲6.8KΩ	†240Ω		
V 10	6CB6	56KΩ	150Ω	.1Ω	0Ω	†1.9KΩ	†1.9KΩ	0Ω		
V 11	6AU6	1.7Ω	150Ω	0Ω	.1Ω	†1.2KΩ	†33KΩ	150Ω		
V 12	6AU6	56KΩ	0Ω	.1Ω	0Ω	†1.2KΩ	†20KΩ	0Ω		
V 13	6AL5	Inf.	Inf.	.1Ω	0Ω	22KΩ	Inf.	22KΩ		
V 14	12AX7	†235KΩ	6.8Meg	68Ω	0Ω	0Ω	†51KΩ	1Meg	35KΩ	.1Ω
V 15	6W6GT	0Ω	0Ω	†100Ω	†15KΩ	470KΩ	470KΩ	.1Ω	120Ω	
V 16	6W6GT	Inf.	.1Ω	†100Ω	†15KΩ	470KΩ	470KΩ	0Ω	120Ω	
V 17	6T8	1Meg	1Meg	2Meg	0Ω	.1Ω	2.2Meg	0Ω	4.7Meg	†20KΩ
V 18	12AU7	▲28KΩ	†700KΩ	0Ω	0Ω	0Ω	†68KΩ	3.2Meg	250Ω	.1Ω
V 19	12AU7	#5Meg	1.9Meg	190Ω	0Ω	0Ω	▲1Meg	1Meg	0Ω	.1Ω
V 20	6BL7GT	4.7Meg	▲1.6KΩ	1KΩ	4.7Meg	▲1.6KΩ	1KΩ	.1Ω	0Ω	
V 21	6AU6	22KΩ	230Ω	0Ω	.1Ω	▲680KΩ	▲100KΩ	300Ω		
V 22	6AV5GT	1Meg	0Ω	330Ω	Inf.	#55Ω	Inf.	.1Ω	▲2.1KΩ	
V 23	6AV5GT	1Meg	0Ω	330Ω	Inf.	#55Ω	Inf.	.1Ω	▲2.1KΩ	
V 24	6W4GT	#0Ω	Inf.	900KΩ	Inf.	▲200Ω	Inf.	#.1Ω	#0Ω	
V 25	6W4GT	Inf.	Inf.	900KΩ	Inf.	▲200Ω	Inf.	#.1Ω	#0Ω	
V 26	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #420Ω
V 27	5U4G	Inf.	12KΩ	Inf.	240Ω	Inf.	240Ω	Inf.	12KΩ	
V 28	5U4G	Inf.	40KΩ	Inf.	250Ω	Inf.	250Ω	Inf.	40KΩ	
V 29	24AP4	■0Ω	▲1Meg	PIN 10 #420KΩ	PIN 11 ▲430KΩ	PIN 12 ■.2Ω				

ALL CONTROLS SET FOR NORMAL OPERATION
† MEASURED FROM PIN 2 OF V27
▲ MEASURED FROM PIN 2 OF V28
MEASURED FROM PIN 3 OF V24 AND V25
■ MEASURED FROM 155VDC LINE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), for maximum raster width without crowding or foldover.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

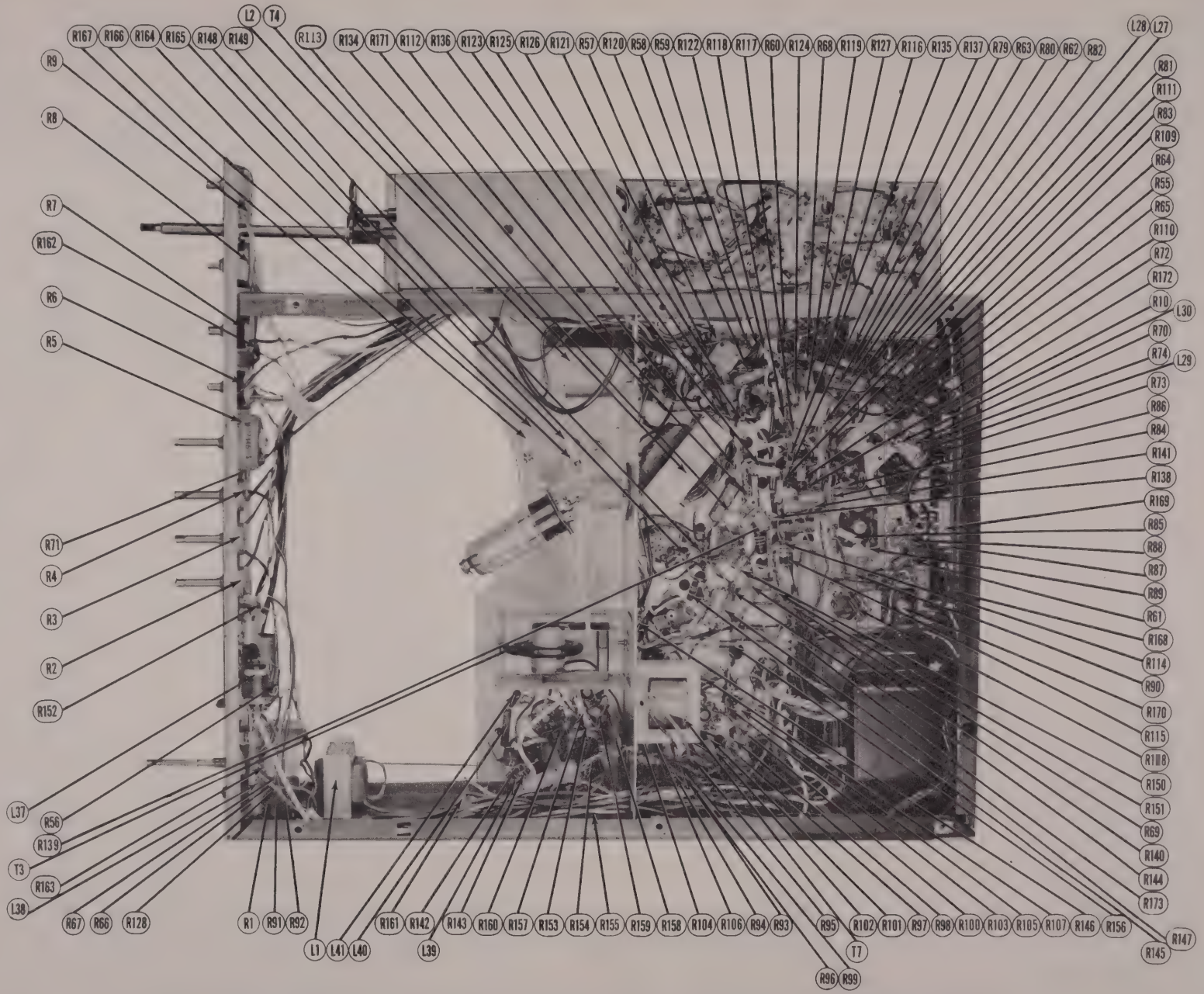
Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right. Since B3 and B4 are interacting it may be necessary to adjust them alternately for best results.

The deflection yoke trimmer, (B5), is used to compensate for individual differences in distributed capacity between the halves of the horizontal deflection yoke. This capacity unbalance may cause the horizontal sweep lines to "ripple", that is, the left edge of the raster may be rippled instead of straight and even. In the event of such ripples, adjustment of B5 should eliminate them.

DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove twelve wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Disconnect picture tube socket and ground lead.
6. Disconnect yoke cable.
7. Disconnect focus coil.
8. Disconnect white power lead.
9. Disconnect high voltage lead.
10. Remove four 7/16" hex head bolts from chassis.
11. Remove four 5/16" hex head nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	1st. RF Amplifier	6AB4	6AB4	5CE	
V2	2nd. RF Amplifier	6CB6	6CB6	7CM	
V3	Converter	12AT7	12AT7	9A	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	4th. Video IF Amp.	6CB6	6CB6	7CM	
V8	Video Amplifier	6AG7	6AG7	8Y	
V9	AGC Keyer	6AU6	6AU6	7BK	
V10	Sound Take-Off IF Amp.	6CB6	6CB6	7CM	
V11	Sound IF Amp.	6AU6	6AU6	7BK	
V12	Limiter	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	AF Amplifier - Phase Inverter	12AX7	12AX7	9A	
V15	Audio Output	6W6GT	6W6GT	7AC	
V16	Audio Output	6W6GT	6W6GT	7AC	
V17	1st. Sync. Amp.- Sync. Clipper - Horiz. Phase Det.	6T8	6T8	9E	
V18	2nd. Sync. Amp.- Horiz. AFC	12AU7	12AU7	9A	
V19	Vert. Oscillator- Vert. Blanking	12AU7	12AU7	9A	
V20	Vert. Amplifier	6BL7GT	6BL7GT	8BD	
V21	Horiz. Oscillator	6AU6	6AU6	7BK	
V22	Horizontal Output	6AV5GT	6AV5GT	6CK	
V23	Horizontal Output	6AV5GT	6AV5GT	6CK	
V24	Damper	6W4GT	6W4GT	4CG	
V25	Damper	6W4GT	6W4GT	4CG	
V26	HV Rectifier	1B3GT	1B3GT	3C	
V27	LV Rectifier	5U4G	5U4G	5T	
V28	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V29	24AP4			12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	RCE-133	AFH2-61		UPT33345		TVL-2770	▪ Filter
B	60	350							▲ Filter
C2A	40	450	RCE-122	AFH4-93		UP43245		TVL-4718	▲ Filter
B	30	350				BR502A		TVA-1206	■ Filter
C	15	350							▲ Decoupling
D	30	25							Audio Output Cathode
C3	500	125	RCE-125			UPE202015			▪ Bias Filter
C4A	30	450	RCE-121	AFH4-81		UPT3345C		TVL-4742	▲ Vert. Amp. Dec.
B	15	350				BR502A			■ Decoupling
C	30	250							▲ Video Amp. Screen
D	25	25							Horiz. AFC Cathode
C5	100	150	RCE-123	PRS150/100		BR10015		TVA-1420	Vert. Amp. Cathode
C6	1000	6	RCE-106	PRS6/1000		BRH610		TVA-1104	Vert. Cent. Cont. Bypass
C7	500	15	RCE-128	PRS15/500		BRH155A		TVA-1162	Horiz. Cent. Cont. Bypass
C8	500	15	RCE-126	PRS15/500		BRH155A		TVA-1162	Horiz. Cent. Cont. Bypass
C9	5	150	RCE-056	PRS150/4		BR415		TVA-1402	AGC Filter
C10	1	50	RCE-090	PRS150/4		BBR1-50T		TVA-1300	Stabilizing Cap.
C11	1		RCN-001		TCZ-1		NP0K-010		Fixed Trimmer
C12	800		RCW-3037	BPD-0008	DD-801		801-001	5HK-D1	1st. RF Amp. Cathode
C13	680		RCW-3045	SI680	D6-681		GP2K-681	5GA-T68	RF Coupling
C14	43	500	UCG-2019						Fixed Trimmer
C15	5	500	UCG-1005	1469-000005		5R5V5		MS-55	Fixed Trimmer
C16A	800		RCN-027	BPD-2X001	DD-2-102		812-001	5HK-2D1	1st. RF Amp. Fil.
B	800								RF Bypass
C17	1-5		RCY-065		829-6				Variable Trimmer
C18	5		RCW-2035	SI5			GP1K-050		RF Coupling
C19	1-5		RCY-065		829-6				Variable Trimmer
C20	800		RCW-3037	BPD-0008	DD-801		801-001	5HK-D1	AGC Filter
C21	680		RCW-3045	SI680	D6-681		GP2K-681	5GA-T68	2nd. RF Amp. Screen
C22	680		RCW-3027	SI680	D6-681		GP2K-681	5GA-T68	2nd. RF Amp. Plate
C23	3.3	500	RCN-028	SI3.3NP0	TCZ-3.3		NP0K-3R3		RF Coupling
C24	1.5		RCW-3046	SI1.5NP0	TCZ-1.5		NP0K-1R5		Osc. Coupling
C25	800		RCW-3037	BPD-0008	DD-801		801-001	5HK-D1	Osc. Plate
C26	3.3		RCW-3047	SI3.3NP0	TCZ-3.3		NP0K-3R3		Osc. Feedback
C27	800		RCW-3037	BPD-0008	DD-801		801-001	5HK-D1	RF Bypass
C28	12	500	UCG-1006						Fixed Trimmer
C29	800		RCW-3037	BPD-0008	DD-801		801-001	5HK-D1	Osc. Fil.
C30	5	500		1469-000005				MS-55	Fixed Trimmer †
C31	800		RCW-3037	BPD-0008	DD-801		801-001	5HK-D1	Conv. Plate Dec.
C32	56	500	UCG-2022						Fixed Trimmer
C33	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	AGC Filter
C34	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	AGC Filter
C35	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	AGC Filter
C36	680	500	UCU-1048	1479-0007	D6-681	1W5T7	GP2K-681	1FM-37	1st. Video IF Dec.
C37	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	RF Bypass
C38	9		RCW-3044				NP0K-090		IF Coupling
C39	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	AGC Filter
C40	680	500	UCU-1048	1479-0007	D6-681	1W5T7	GP2K-681	1FM-37	2nd. Video IF Dec.
C41	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	RF Bypass
C42	15		RCW-3040	SI15	D6-150		GP1K-150	5GA-Q15	IF Coupling
C43	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	AGC Filter
C44	5000		RCW-3014	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec.
C45	680	500	UCU-1048	1479-0007	D6-681	1W5T7	GP2K-681	1FM-37	3rd. Video IF Dec.
C46	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	3rd. Video IF Fil.
C47	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	RF Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C48	56	500	UCG-2022						Fixed Trimmer
C49	33		RCW-3041	5133	D6-330		GP1K-330	5GA-Q33	IF Coupling
C50	680	500	UCU-1048	1479-0007	D6-681	1W5T7	GP2K-681	1FM-37	4th. Video IF Dec.
C51	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	4th. Video IF Cathode
C52	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	4th. Video IF Fil.
C53	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	RF Bypass
C54	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	RF Bypass
C55	3.2		RCW-3019				N750K-2R2		IF Coupling
C56	62	500	UCG-2023						Fixed Trimmer
C57	68	500	UCG-2024	1469-00007		5R5Q7		MS-47	Fixed Trimmer
C58	8		RCW-3042				NP0 K-060		Fixed Trimmer
C59	.2	600	UCC-050	P488-22		GT4P2		4TM-P22	Video Coupling
C60	110	500	UCG-2029						Fixed Trimmer
C61	.003	600	UCC-039	P688-002	D6-203	PTE6D2	GP2-333-202	6TM-D2	AGC Filter
C62	.05	600	UCC-045	P688-05	DF-503	PTE685		6TM-S5	AGC Filter
C63	.2	200	UCC-050	P488-22		GT4P2		2TM-P22	AGC Filter
C64	9		RCW-3044				NP0K-090		Sound IF Coupling
C65	680	500	UCU-1048	1479-0007	D6-681	1W5T7	GP2K-681	1FM-37	1st. Sound IF Dec.
C66	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	1st. Sound IF Cathode
C67	800		RCW-3037	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	RF Bypass
C68	43	500	UCG-2019		TCZ-43		NP0L-430		IF Coupling
C69	10	500	UCG-2004	1469-00001	TCZ-10	5R5Q1	NP0K-100	MS-41	IF Coupling
C70	5000		RCW-3014	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Plate
C71	5000		RCW-3014	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Screen
C72	5000		RCW-3014	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Cathode
C73	47	500	UCU-1520	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	Limiter Grid Filter
C74	5000		RCW-3014	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Limiter Plate
C75	5000		RCW-3014	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Limiter Screen
C76	.001	200	UCC-035	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	RF Bypass
C77	.002	200	UCC-036	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	De-emphasis
C78	.01	200	UCC-040	P488-01	D6-103	PTE6S1	GP2-333-103	4TM-S1	Audio Coupling
C79	.01	200	UCC-040	P488-01	D6-103	PTE6S1	GP2-333-103	4TM-S1	Audio Coupling
C80	.005	200	UCC-039	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C81	.08	600	UCC-041	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C82	.006	600	RCC-002	P688-006		PTE6D6	GP2-333-602	6TM-D6	Audio Coupling
C83	.006	600	RCC-002	P688-006		PTE6D6	GP2-333-602	6TM-D6	Audio Coupling
C84	.005	1000	UCC-059	P1088-005		PTE16D5		MB-D5	Audio Output Plate
C85	.2	400	UCC-050	P488-22		GT4P2		4TM-P22	Sync. Coupling
C86	470	500	UCU-544	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Sync. Coupling
C87	68	500	UCG-1024	1469-00007	TCZ-68	5R5Q7	NP0-333-680	MS-47	Sync. Amp. Grid
C88	.01	600	UCC-040	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C89	.01	600	UCC-040	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Sync. Coupling
C90A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		♦PC-100	P688-005		PTE6D5	GP2-333-502	♦101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C91	4700	500	UCU-1068	1464-005		1DR5D5		MS-25	Vert. Osc. Grid Cap.
C92	.1	600	UCC-048	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Osc. Dec.
C93	.03	600	UCC-042	P688-03		PTE6S3		6TM-S3	Vert. Sweep Coupling
C94	.033	600	UCC-042	P688-033		PTE6S3		6TM-S3	Vert. Discharge
C95	3900	500	UCU-1066	1464-004		1DR5D4			Vert. Sweep Coupling
C96	470	500	UCU-1544	1469-0005		5R5T5		MS-35	Vert. Blanking Plate
C97	.2	600	UCC-050	684-2		GT6P2			Integrator Net.
C98	180	500	UCU-1034	1468-0002	D6-181	5W5T2	GP2K-181	1FM-32	Horiz. Sync. Coupling
C99	180	500	UCU-1034	1468-0002	D6-181	5W5T2	GP2K-181	1FM-32	Horiz. Sync. Coupling
C100	1000	500	UCU-1052	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Sync. Coupling
C101	120	500	UCU-1030	1469-00015		5R5T15			Horiz. Feedback
C102	.05	600	UCC-045	P688-05	DF-503	PTE685		6TM-S5	Horiz. Feedback
C103	1000	500	UCU-052	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Feedback
C104	27	500	UCU-1014		D6-270	5W5Q3	GP1K-270	MS-43	Voltage Divider
C105	1000	500	UCU-1052	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	AFC Filter
C106	.015	200	RCN-042	P288-015					AFC Filter
C107	4700	500	UCU-068	1467-005	D6-472	1D5D5	GP2-333-472	1FM-25	AFC Filter
C108	.05	200	UCC-045	P288-05	DF-503	PTE485		2TM-S5	AFC Filter
C109	470	500	UCU-1544	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. AFC Coupling
C110	220	500	UCU-1536	1469-00025		5R5T25			Horiz. Osc. Grid Cap.
C111	1800	500	UCU-1058	1467-002	D6-182	1W5D2	GP2-333-182	1FM-22	AFC Filter
C112	3900	500	UCU-1066	1464-004		1DR5D4			Fixed Trimmer
C113	.01	600	UCC-040	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Horiz. Osc. Screen
C114	.05	600	UCC-045	P688-05	DF-503	PTE685		6TM-S5	Horiz. Osc. Dec.
C115	470	500	UCU-1544	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Horiz. Sweep Coupling
C116	.1	400	UCC-048	P488-1	DF-104	PTE4P1		4TM-P1	Horiz. Output Screen
C117	.5	400	UCC-053	484-5		GT4P5		4TM-P5	Horiz. Output Cathode
C118	330	500	RCU-298	1469-00035					Damper Cathode Bypass
C119	.05	600	UCC-045	P688-05	DF-503	PTE685		6TM-S5	Damper Filter
C120	.1	600	UCC-048	P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C121	.01	600	UCC-040	P688-01	D6-103	PTE681	GP2-333-103	6TM-S1	Decoupling
C122	500	20000	RCN-023	HV30C	TV3-502				HV Filter

† Some models use 56MMF in this applicatchs.
♦ Items C90A, C90B, C90C, R119A, R119B, R119C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA General Elec. PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	10KΩ	1	RRC-161				Contrast Control-Panel - Wire Wound
B	2Meg	½					Volume Control and Switch - Rear-Tapped at 125KΩ
R2A	100KΩ	½	RRC-160	Q11-128	AG-49-S	B-40	Horiz. Hold Control
B	Shaft		Not req.	Not req.	RS-2	Not req.	Attach to R2A per instructions
R3A	1Meg	½	RRC-157	Q14-137	AG-61-S		Vertical Hold Control
B	Shaft			Not req.	KSS-3		Attach to R3A per instructions
R4A	2Meg	½	RRC-158	Q11-139	AG-83-S		Brightness Control
B	Shaft		Not req.	Not req.	RS-2		Attach to R4A per instructions
R5	400Ω	‡5	RRW-065				Focus Control - Wire Wound
R6	20Ω	‡	RRW-067	W-20X10	RTV-98	SVT-901	Vertical Centering Control - Tapped at 10Ω
R7	500Ω	‡	RRW-066	W-500	43-500	VK-127	Horiz. Centering Control - Wire Wound
R8	2000Ω	2	RRW-068	W-2000	43-2000	VK-131	Vertical Linearity Control - Wire Wound
R9A	4Meg	½	†	Q11-140	AG-85-S	AN-86	Vertical Size Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R9A per instructions
R10A	25KΩ	½	RRC-140	Q11-120	AG-40-S	AN-26	AGC Control
B	Shaft		Not req.	RQ	FKS-1/4	AK-1	Attach to R10A per instructions

† Some models may use a 3Meg control, manufacturer part # RRC-159, in this application.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA General Elec. PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R11	120Ω	½	URD-025	BTS-120	Antenna Isolation
R12	18KΩ	½	URD-079	BTS-18K	1st. RF Amp. Plate Decoupling
R13	1200Ω	½	URD-051	BTS-1200	RF Coil Shunt
R14	18KΩ	½	URD-079	BTS-18K	Voltage Divider
R15	10KΩ	½	URD-073	BTS-10K	2nd. RF Amp. Grid
R16	33Ω	½	URD-013		2nd. RF Amp. Cathode
R17	6800Ω	½	URD-069	BTS-6800	2nd. RF Amp. Screen
R18	5600Ω	½	URD-067	BTS-5600	2nd. RF Amp. Plate
R19	1000Ω	½	URD-049	BTS-1000	2nd. RF Amp. Plate Decoupling
R20	8200Ω	½	URD-071	BTS-8200	Osc. Grid
R21	3300Ω	½	URD-061	BTS-3300	Osc. Plate
R22	2200Ω	½	URD-057	BTS-2200	Osc. Plate Decoupling
R23	10KΩ	½	URD-073	BTS-10K	Mixer Grid
R24	220KΩ	½	URD-105	BTS-220K	Mixer Grid
R25	1000Ω	½	URD-049	BTS-1000	Mixer Plate Decoupling
R26	5600Ω	1	URE-067	BTA-5600	Voltage Divider - See Note 1
R27	1000Ω	½	URD-049	BTS-1000	Converter Transformer Shunt
R28	18KΩ	½	URD-079	BTS-18K	1st. Video IF Transformer Shunt
R29	22KΩ	20% ½	URD-081		1st. Video IF Amp. Grid
R30	68Ω	½	URD-021		1st. Video IF Amp. Cathode
R31	22KΩ	½	URD-081	BTS-22K	2nd. Video IF Coil Shunt
R32	1000Ω	20% ½	URD-049	BTS-1000	1st. Video IF Amp. Decoupling
R33	470Ω	20% ½	URD-041	BTS-470	1st. Video IF Amp. Decoupling
R34	10KΩ	½	URD-073	BTS-10K	AGC Network
R35	100KΩ	20% ½	URD-097	BTS-100K	AGC Network
R36	18KΩ	20% ½	URD-079		2nd. Video IF Amp. Grid
R37	47KΩ	20% ½	URD-089		2nd. Video IF Amp. Grid
R38	68Ω	½	URD-021		2nd. Video IF Amp. Cathode
R39	6800Ω	½	URD-069	BTS-6800	3rd. Video IF Coil Shunt
R40	1000Ω	20% ½	URD-049	BTS-1000	2nd. Video IF Amp. Decoupling
R41	470Ω	20% ½	URD-041	BTS-470	2nd. Video IF Amp. Decoupling
R42	47KΩ	½	URD-089		3rd. Video IF Amp. Grid
R43	68Ω	½	URD-021		3rd. Video IF Amp. Cathode
R44	1000Ω	20% ½	URD-049	BTS-1000	3rd. Video IF Amp. Screen
R45	470Ω	20% ½	URD-041	BTS-470	3rd. Video IF Amp. Screen Decoupling
R46	27KΩ	½	URD-083	BTS-27K	4th. Video IF Coil Shunt
R47	2200Ω	½	URD-057	BTS-2200	3rd. Video IF Amp. Plate Decoupling
R48	33KΩ	½	URD-085		4th. Video IF Amp. Grid - See Note 1
R49	150Ω	½	URD-029	BTS-150	4th. Video IF Amp. Cathode
R50	18KΩ	½	URD-079	BTS-18K	5th. Video IF Coil Shunt.
R51	1000Ω	20% ½	URD-049	BTS-1000	4th. Video IF Amp. Decoupling
R52	470Ω	20% ½	URD-041	BTS-470	4th. Video IF Amp. Decoupling
R53	3300Ω	5% ½	URD-061	BTS-3300	Video Amp. Grid
R54	68KΩ	20% ½	URD-093	BTS-68K	Series Test Point # 2
R55	220Ω	20% 2	URF-033		Decoupling
R56	6800Ω	1	URE-069	BTA-6800	AGC Keyer Plate
R57	33KΩ	20% ½	URD-085	BTS-33K	AGC Filter
R58	150KΩ	½	URD-101	BTS-150K	AGC Filter
R59	150KΩ	½	URD-101	BTS-150K	AGC Filter
R60	100KΩ	½	URD-097	BTS-100K	Voltage Divider
R61	820Ω	½	URD-047	BTS-820	Voltage Divider
R62	3900Ω	2	URF-063	BTS-3900	Video Amp. Plate
R63	5600Ω	2		BTS-5600	Video Amp. Plate
R64	22KΩ	½	URD-081	BTS-22K	Voltage Divider
R65	4700Ω	½	URD-065	BTS-4700	Voltage Divider
R66	4700Ω	2	URF-065	BTS-4700	Voltage Divider
R67	1000Ω	½	URD-049	BTS-1000	Voltage Divider
R68	1500Ω	2	URF-053	BTS-1500	Voltage Divider
R69	100KΩ	½	URD-097	BTS-100K	Picture Tube Grid
R70	10KΩ	½	URD-073	BTS-10K	Picture Tube Cathode Coil Shunt
R71	820KΩ	½	URD-119	BTS-820K	Voltage Divider
R72	470KΩ	½	URD-113	BTS-470K	Voltage Divider
R73	1Meg	½	URD-121	BTS-1Meg	Voltage Divider
R74	1Meg	½	URD-121	BTS-1Meg	Voltage Divider
R75	56KΩ	½	URD-091		1st. Sound IF Amp. Grid
R76	150Ω	½	URD-029	BTS-150	1st. Sound IF Amp. Cathode
R77	1000Ω	20% ½	URD-049	BTS-1000	1st. Sound IF Amp. Decoupling
R78	470Ω	20% ½	URD-041	BTS-470	1st. Sound IF Amp. Decoupling
R79	150Ω	½	URD-029	BTS-150	2nd. Sound IF Amp. Cathode
R80	33KΩ	½	URD-085	BTS-33K	2nd. Sound IF Amp. Screen
R81	1000Ω	20% ½	URD-049	BTS-1000	2nd. Sound IF Amp. Plate Decoupling
R82	220KΩ	20% ½	URD-105	BTS-220K	Series Test Point # 7
R83	56KΩ	½	URD-091		Limiter Grid
R84	100KΩ	½	URD-097	BTS-100K	Limiter Screen
R85	1000Ω	½	URD-049	BTS-1000	Limiter Plate Decoupling
R86	22KΩ	½	URD-081	BTS-22K	Voltage Divider
R87	22KΩ	5% ½	URD-1081		Ratio Detector Diode Load
R88	22KΩ	5% ½	URD-1081		Ratio Detector Diode Load
R89	270Ω	½	URD-107	BTS-270	Balancing
R90	22KΩ	½	URD-081	BTS-22K	De-emphasis
R91	47KΩ	½	URD-089	BTS-47K	Tone Compensation
R92	100KΩ	20% ½	URD-097	BTS-100K	Tone Compensation
R93	6.8Meg	20% ½	URD-141	BTS-6.8Meg	AF Amp. Grid
R94	68Ω	½	URD-021		AF Amp. Cathode
R95	220KΩ	5% ½	URD-105	BTS-220K	AF Amp. Plate
R96	1200Ω	½	URD-051	BTS-1200	Feedback
R97	1Meg	20% ½	URD-121	BTS-1Meg	Phase Inverter Grid
R98	2700Ω	½	URD-059	BTS-2700	Phase Inverter Cathode
R99	36KΩ	½	URD-1086		Phase Inverter Plate
R100	33KΩ	½	URD-085	BTS-33K	Voltage Divider
R101	1000Ω	20% ½	URD-049	BTS-1000	Output Grid
R102	470KΩ	20% ½	URD-041	BTS-470K	Output Grid
R103	1000Ω	20% ½	URD-025	BTS-100	Parasitic Suppressor
R104	1000Ω	20% ½	URD-049	BTS-1000	Output Grid
R105	470KΩ	20% ½	URD-113	BTS-470K	Output Grid
R106	120Ω	2	URF-027	BW-2-120	Output Cathode – Wire Wound
R107	100Ω	½	URD-025	BTS-100	Parasitic Suppressor
R108	15KΩ	½	URE-077	BTA-15K	Decoupling
R109	3600Ω	5% ½	URD-1062		Isolation
R110	4.7Meg	20% ½	URD-137	BTS-4.7Meg	1st. Sync. Amp. Grid
R111	33KΩ	½	URD-085	BTS-33K	1st. Sync. Amp. Plate
R112	33KΩ	½	URD-085	BTS-33K	Voltage Divider
R113	680KΩ	20% ½	URD-117	BTS-680K	2nd. Sync. Amp. Grid
R114	56KΩ	2	URF-091	BTS-56K	2nd. Sync. Amp. Plate
R115	56KΩ	2	URF-091	BTS-56K	2nd. Sync. Amp. Plate
R116	6800Ω	2	URF-069	BTS-6800	Voltage Divider
R117	68KΩ	½	URD-093	BTS-68K	Integrator Network
R118	22KΩ	5% ½	URD-1081	BTS-22K	Integrator Network

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA General Electric PART No.	IRC PART No.	IDENTIFICATION CODES
R119A	22KΩ	½		BTS-22K	Integrator Network
B	8200Ω	½	♦REK-001	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R120	1.5Meg	½	URD-125	BTS-1.5Meg	Vertical Osc. Grid
R121	1Meg	½	URD-121	BTS-1Meg	Vertical Osc. Plate
R122	1Meg	½	URD-121	BTS-1Meg	Vertical Blanking Grid
R123	100KΩ	½	URD-097	BTS-100K	Vertical Feedback
R124	6800Ω	½	URD-069	BTS-6800	Vertical Peaking
R125	4.7Meg	20% ½	URD-137	BTS-4.7Meg	Vertical Output Grid
R126	220Ω	½	URD-033	BTS-220	Vertical Output Cathode
R127	470Ω	20% 2	URF-041	BTB-470	Vertical Output Plate Decoupling
R128	1.5Meg	½	URD-125	BTS-1.5Meg	Vertical Osc. Decoupling
R129	68KΩ	½	URD-093	BTS-68K	Voltage Divider
R130	470KΩ	2		BTB-470K	Voltage Divider - See Note 2
R131	470KΩ	2		BTB-470K	Voltage Divider - See Note 2
R132	470KΩ	2		BTB-470K	Voltage Divider - See Note 2
R133	270KΩ	½	URD-107	BTS-270K	Acc. Anode Load
R134	68KΩ	½	URD-093	BTS-68K	Voltage Divider
R135	1Meg	½	URD-121	BTS-1Meg	Horiz. Phase Det. Diode Load
R136	68KΩ	½	URD-093	BTS-68K	Horiz. Phase Det. Diode Load
R137	1Meg	½	URD-121	BTS-1Meg	Horiz. Phase Det. Diode Load
R138	150KΩ	½	URD-101	BTS-150K	AFC Filter
R139	1Meg	20% ½	URD-121	BTS-1Meg	AFC Filter
R140	68KΩ	20% ½	URD-093	BTS-68K	AFC Filter
R141	220KΩ	½	URD-105	BTS-220K	Horiz. Feedback Network
R142	100KΩ	1	URE-097	BTA-100K	Horiz. Feedback Network
R143	22KΩ	½	URD-081	BTS-22K	Horiz. Feedback Network
R144	220Ω	20% ½	URD-105	BTS-220	Horiz. AFC Cathode
R145	68KΩ	1	URE-093	BTA-68K	Horiz. AFC Plate
R146	27KΩ	½	URD-083	BTS-27K	Series Horiz. Hold Control
R147	22KΩ	½	URD-081	BTS-22K	Horiz. Osc. Grid
R148	100KΩ	2	URF-097	BTB-100K	Horiz. Osc. Screen
R149	1Meg	½	URD-121	BTS-1Meg	Horiz. Osc. Plate
R150	680KΩ	½	URD-117	BTS-680K	Voltage Divider
R151	100KΩ	20% ½	URD-097	BTS-100K	Voltage Divider
R152	22KΩ	½	URD-081	BTS-22K	Horiz. Peaking
R153	100Ω	20% ½	URD-025		Parasitic Suppressor
R154	1Meg	20% ½	URD-121	BTS-1Meg	Horiz. Output Grid
R155A	50Ω	15	RRW-074		Horiz. Output Cathode - Wire Wound
B	250Ω	15			Horiz. Output Cathode - Wire Wound
R156	30Ω	5% 1	URE-1012		Horiz. Output
R157	100Ω	20% ½	URD-025	BTS-100	Parasitic Suppressor
R158	100Ω	20% ½	URD-025	BTS-100	Parasitic Suppressor
R159	100Ω	½	URD-025		Parasitic Suppressor
R160	†	½	RRW-052		Bleeder - Wire Wound
R161	2000Ω	10		1 3/4A-2000	Horiz. Output Screen
R162	82Ω	½	URD-023	BTS-82	Centering Network
R163	1500Ω	20% ½	URD-053	BTS-1500	Horiz. Linearity Coil Shunt
R164	470KΩ	20% 1	URE-113		HV Filter
R165	470KΩ	20% 1	URE-113		HV Filter
R166	470KΩ	20% 1	URE-113		HV Filter
R167	470KΩ	20% 1	URE-113		HV Filter
R168	470Ω	25	RRW-063		Focus Coil Shunt - Wire Wound
R169	1000Ω	15	RRW-064		Voltage Divider - Wire Wound
R170	330KΩ	1	URE-109	BTA-330K	Line Isolation
R171	1800Ω	1		BTA-1800	Voltage Divider - See Note 3
R172	2.2Meg	20% ½	URD-129	BTS-2.2Meg	Sync. Clipper Diode Load
R173	150KΩ	½	URD-101	BTS-150K	Voltage Divider

† Special type-resistance and wattage varies with voltage (for example at 125 volts the resistance is 10.5KΩ)
♦ Items R119A, R119B, R119C, C90A, C90B, C90C are combined in one unit.
Note 1 Some models use 3300Ω resistor in this application.
Note 2 Some models use 680KΩ resistor in this application.
Note 3 Some models use 5600Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	760VCT	500VCT	5VAC	RTP-310			
	② .325A	.250ADC	.200ADC	② 3A				
			SEC. 4	SEC. 5				
			5VAC	6.3VAC				
			② 3A	② 2.4A				
			SEC. 6	SEC. 7				
			6.3VAC	12.6VCT				
			② .9A	② 5.8A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	190Ω	1.3KΩ	RTO-103	A-8122	A-4000 ①	TSO-2	Vert. Block Osc. Trans.
T3	420Ω	20Ω	RTO-104		HVO-7		Horiz. Output Trans.
	Tap 33Ω	Tap 8.5Ω					
		SEC. 2					
		0Ω					
T4	860Ω	10Ω	RTO-097	A-8113 ①	A-3038	TSO-5 ①	Vert. Output Trans.
T5A	56Ω		RLD-034				Horiz. Deflection Coils
B	93Ω						Vert. Deflection Coils
T6	470Ω		RLF-047		MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA General Elec. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	4.3K CT	4Ω	200Ω CT	.2Ω	RTO-086	A-3824	A-2905	RO-303	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	General Eldctric PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	4Ω	S1212D7	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 7/8"	1"				

FILTER CHOKE

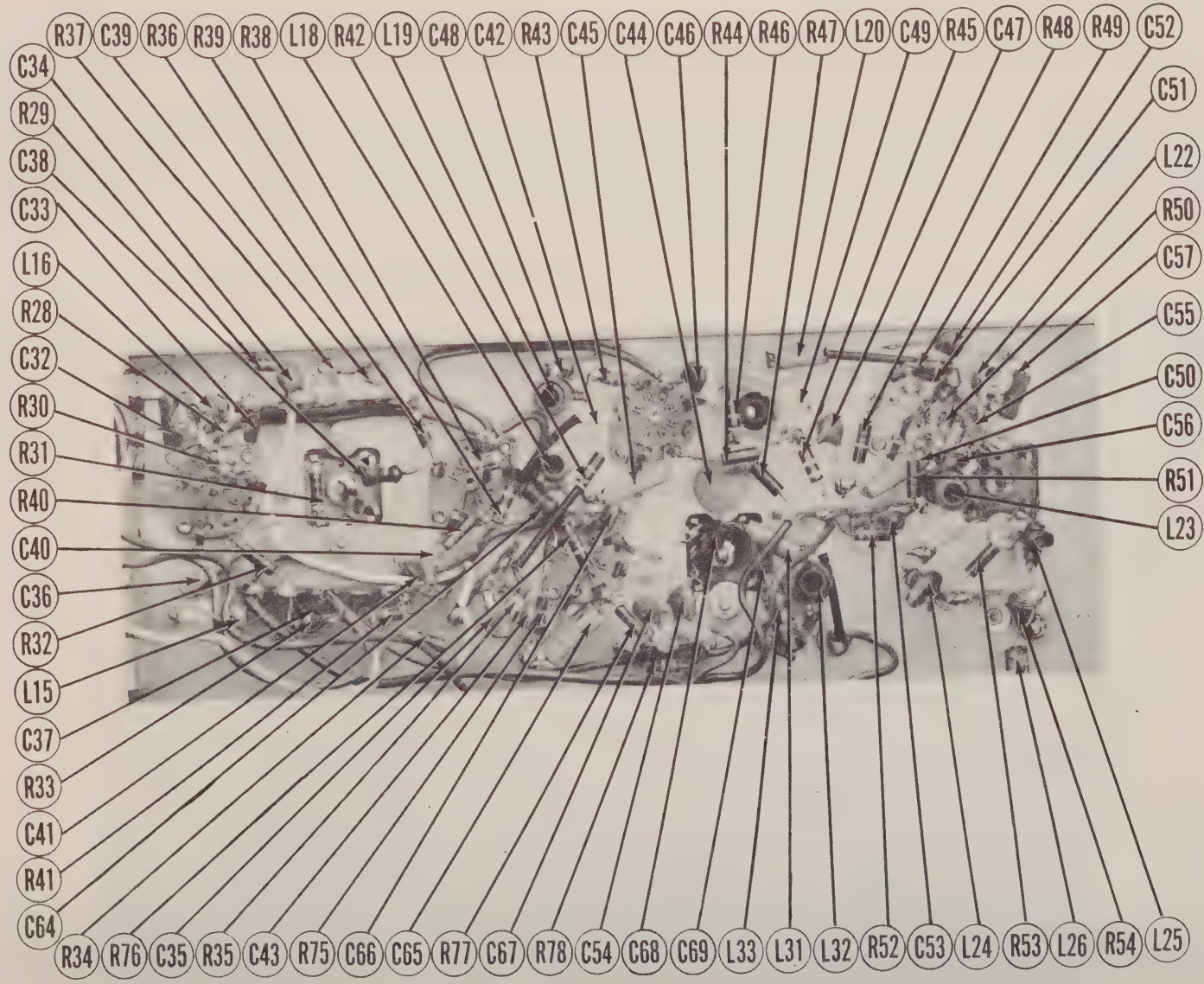
ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	General Elec. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	110A	240Ω	7 Henries	RLF-040	C-1001 ①	C-2993 ①	R-8120 ①	① New mounting hole.
L2	250A	165Ω	7.5 Henries	RLF-041		C-3182 ①		

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	General Electric PART No.	IRC PART No.	
L3	Ant. Trans.	0Ω	.1Ω	RLA-037		
L4	RF Choke	0Ω		RLI-146		.19 Microhenry
L5	Ant. Coil	.1Ω				Part of Switch Wafer - Part # RSX-023
L6	IF Trap			RLI-159		
L7	Fil. Choke	.3Ω		RLI-144	CLA	.56 Microhenry
L8	1st. RF Plate Coils	0Ω				Part of Switch Wafer - Part # RSX-022
L9	RF Coil	0Ω				
L10	2nd. RF Grid Coils	0Ω				Part of Switch Wafer - Part # RSX-021
L11	2nd. RF Plate Coils	0Ω				Part of Switch Wafer - Part # RSX-020
L12	Osc. Coils	0Ω				Part of Switch Wafer - Part # RSX-019
L13	Cathode Choke	.2Ω		RLI-136		
L14	Conv. Plate Coil	0Ω	.1Ω	RTL-126		
L15	Fil. Choke	.1Ω		RLI-142		
L16	1st. Video IF	0Ω	.1Ω	RTL-118		Includes Trap
L17	2nd. Video IF	.1Ω		RLI-133		Includes Trap
L18	3rd. Video IF	.1Ω		RLI-131		
L19	Cathode Trap	0Ω	0Ω	RTL-122		
L20	Fil. Choke	.1Ω		RLI-142		
L21	4th. Video IF	.1Ω		RLI-132		Includes Trap
L22	5th. Video IF	.1Ω	0Ω	RTL-119		Includes Trap
L23	Adj. Video Trap	0Ω		RLI-135		
L24	Peaking	8Ω		RLI-134		250 Microhenries
L25	Peaking	4.8Ω		RLI-108		110 Microhenries
L26	RF Choke	1.8Ω		RLI-122	CLA	2.2 Microhenries
L27	Peaking	4.8Ω		RLI-108		110 Microhenries
L28	Peaking	18Ω		RLI-155		1000 Microhenries wound on 33KΩ resistor
L29	Peaking	17Ω		RLI-143		220 Microhenries
L30	4.5MC Trap	1.1Ω		RLI-140		
L31	RF Choke	.1Ω		RLI-122		2.2 Microhenries
L32	1st. Sound IF	1.8Ω		RLI-139		
L33	RF Choke	1.8Ω		RLI-122	CLA	2.2 Microhenries
L34	2nd. Sound IF	3Ω	3.1Ω	RTL-120		
L35	Ratio Det. Trans.	3.6Ω	.6Ω	RTD-008		Tap .5Ω
L36	Horiz. Osc.	130Ω	Tap 55Ω	RLC-107		
L37	Width Coil	80Ω	46Ω	RLD-033		
L38	Horiz. Lin.	20Ω		RLD-027		
L39	Cathode Choke	1.8Ω		RLI-122	CLA	2.2 Microhenries
L40	Anti-Ringing Choke	8.2Ω		RLI-138	CL-1	10 Microhenries
L41	Anti-Ringing Choke	8.2Ω		RLI-138	CL-1	10 Microhenries
L42	Anti-Ringing Choke	8.2Ω		RLI-138	CL-1	10 Microhenries

MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M1	RF Tuner		
M2	Video IF Coil		
	RF Choke	RLF-024	31 Microhenries
	Crystal	1N64	1N64 — Det. Assy. Part # RLX-031
	Capacitor	RCN-029	9 MMF
	Capacitor	UCG-1005	5 MMF
M3	Video IF		Includes Trap
	Crystal	1N64	1N64 — Det. Assy. Part # RLX-032
	Resistor	URD-097	100KΩ
M4	Switch	RSS-005	TV-Phono
M5	Ion Trap	RET-010	
	Switch Wafer	RSX-019	Osc. Includes Coils
	Switch Wafer	RSX-020	2nd. RF Plate Coils
	Switch Wafer	RSX-021	2nd. RF Grid Coils
	Switch Wafer	RSX-022	1st. RF Plate Coils
	Switch Wafer	RSX-023	Ant. Coils
	Knob	RDK-223	Off/On - Volume
	Knob	RDK-238	Channel Selector
	Knob	RDK-240	Contrast
	Knob	RDK-241	Fine Tuning
	Knob	RDK-239	4 Required (Focus, Brightness, Vert. & Horiz. Hold)
B2	Trimmer	RCY-064	(110-580 MMF)Horiz. Drive
A23	Trimmer	RCY-066	(20-50 MMF)RF Trimmer



VIDEO IF SUB-CHASSIS-BOTTOM VIEW

PHOTOFACT* Folder

*TRADE MARK

HALLICRAFTERS
MODEL 17810M

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HALLICRAFTERS
MODEL 17810M

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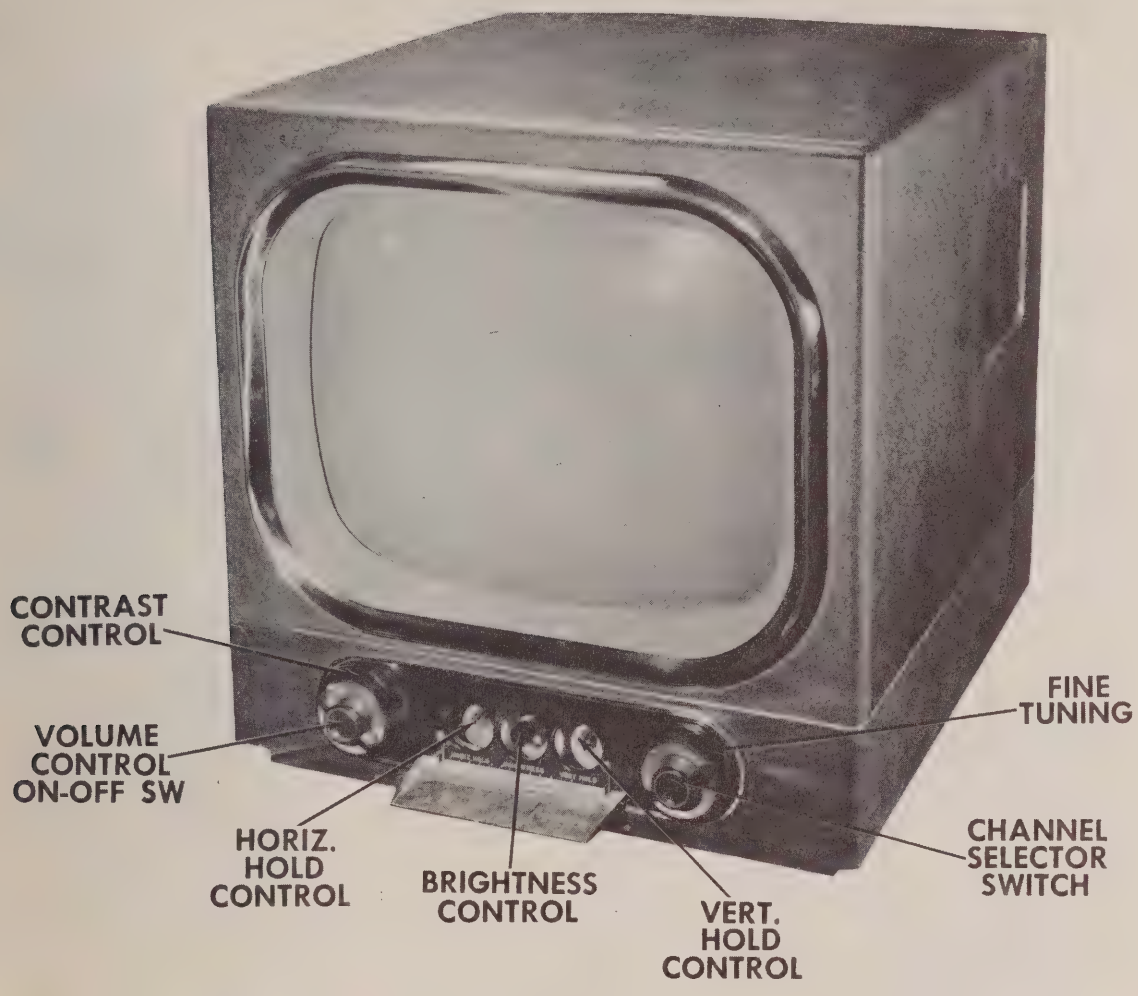
HALLICRAFTERS MODEL 17810M



HALLICRAFTERS MODEL 17810M

TRADE NAME	Hallicrafters, Model 17810M
MANUFACTURER	Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Illinois
TYPE SET	Television Receiver
TUBES	Sixteen
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.2 Amp. at 117 Volts AC
TUNING RANGE	CHANNELS 2 thru 13

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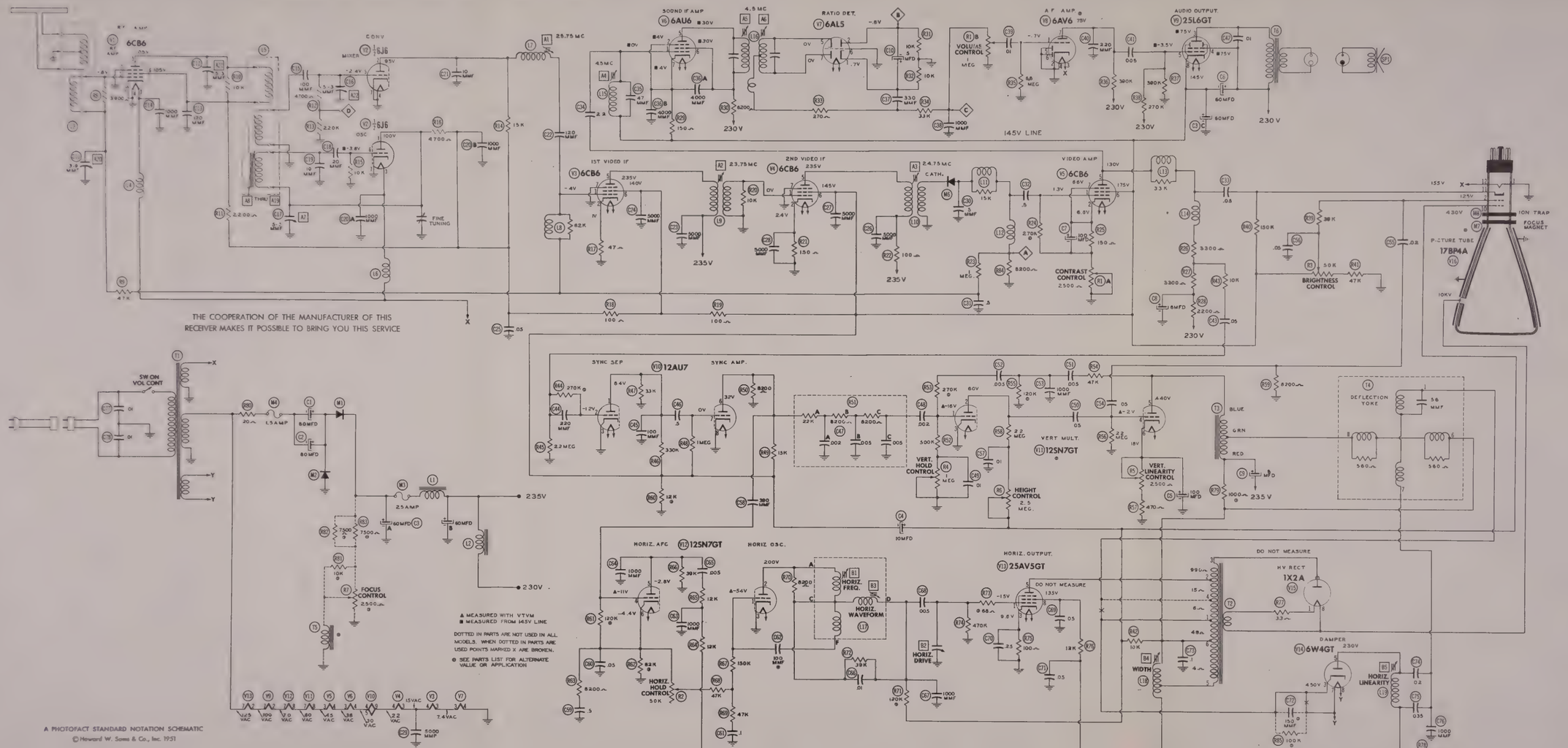

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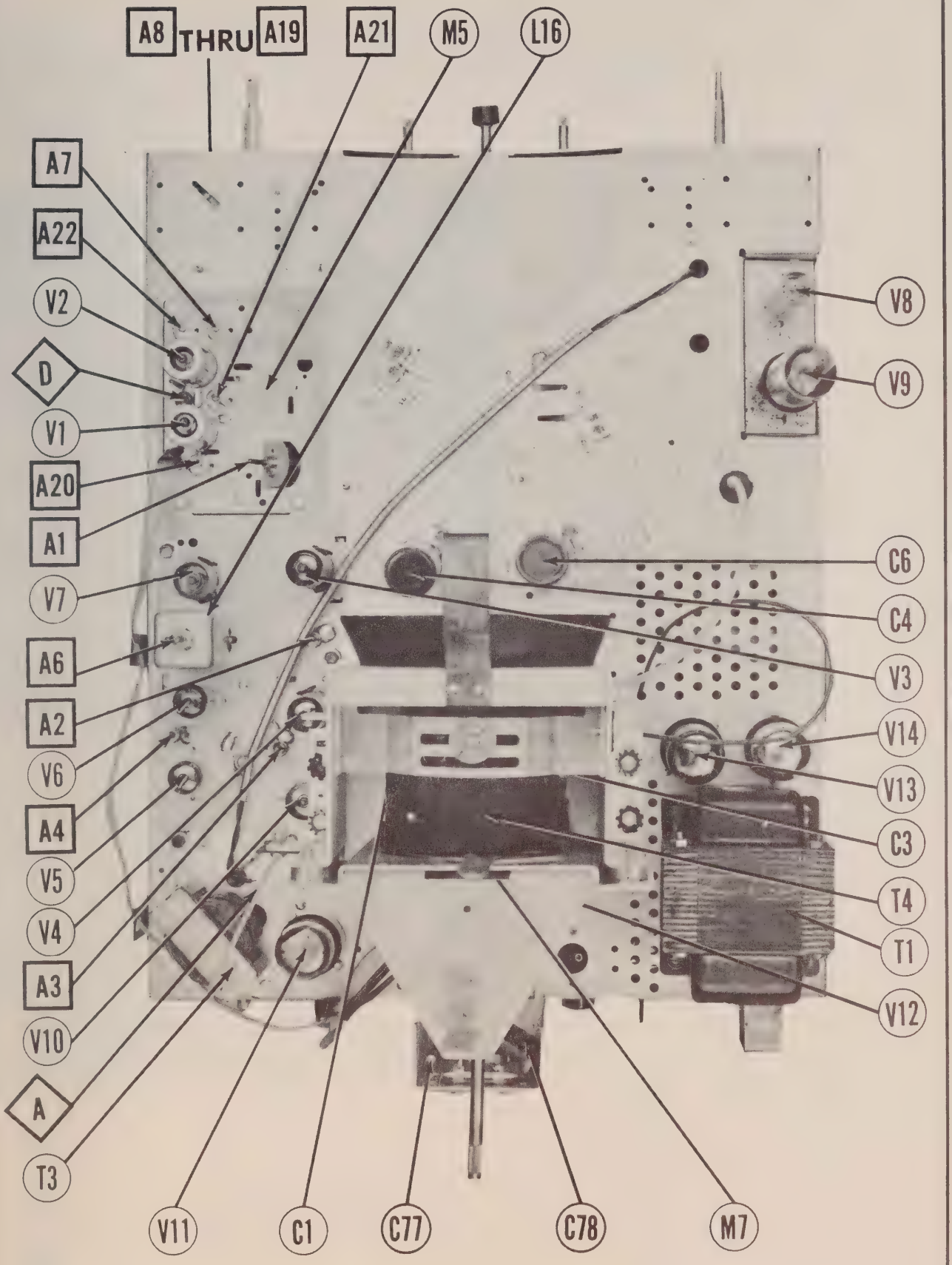
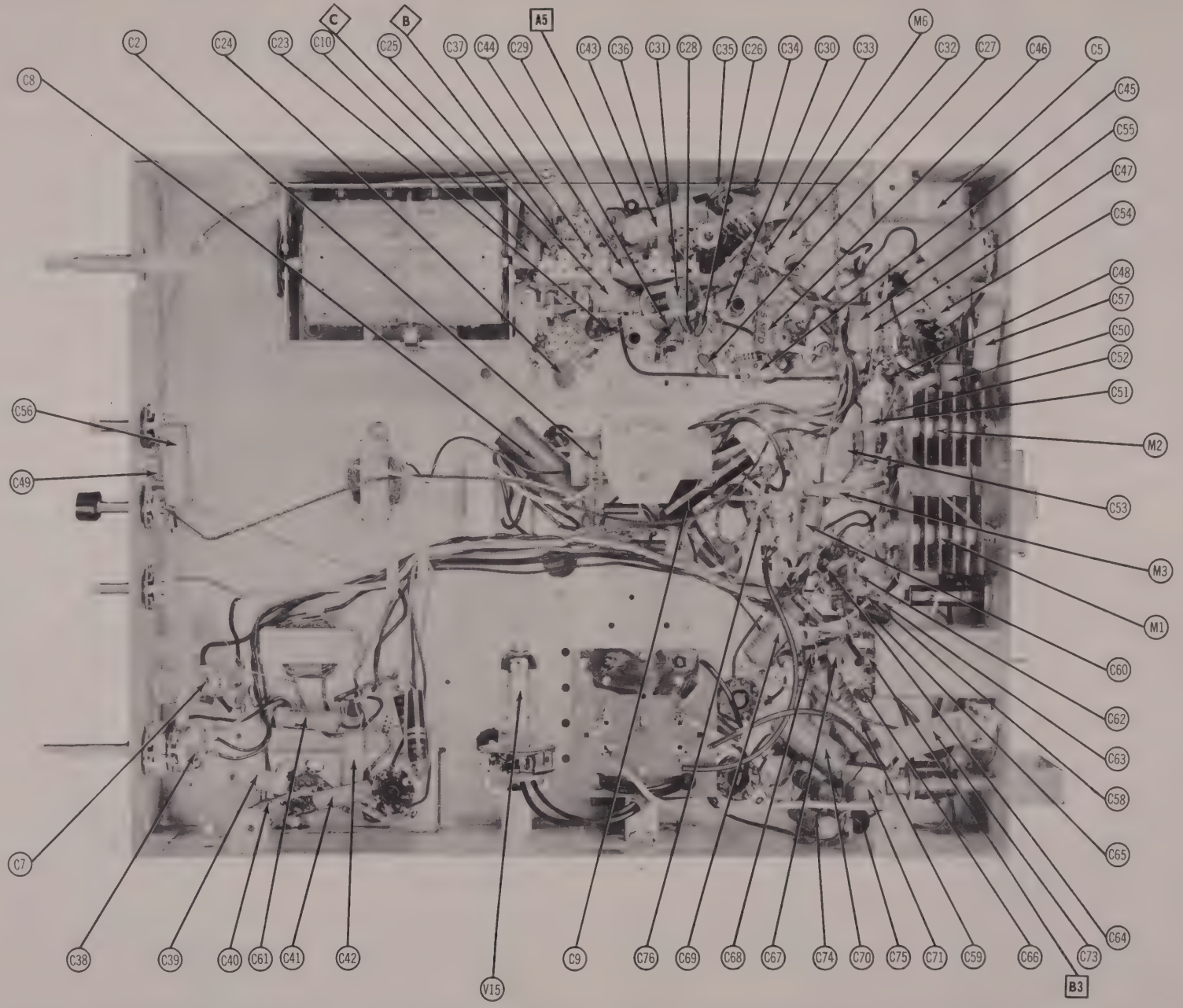
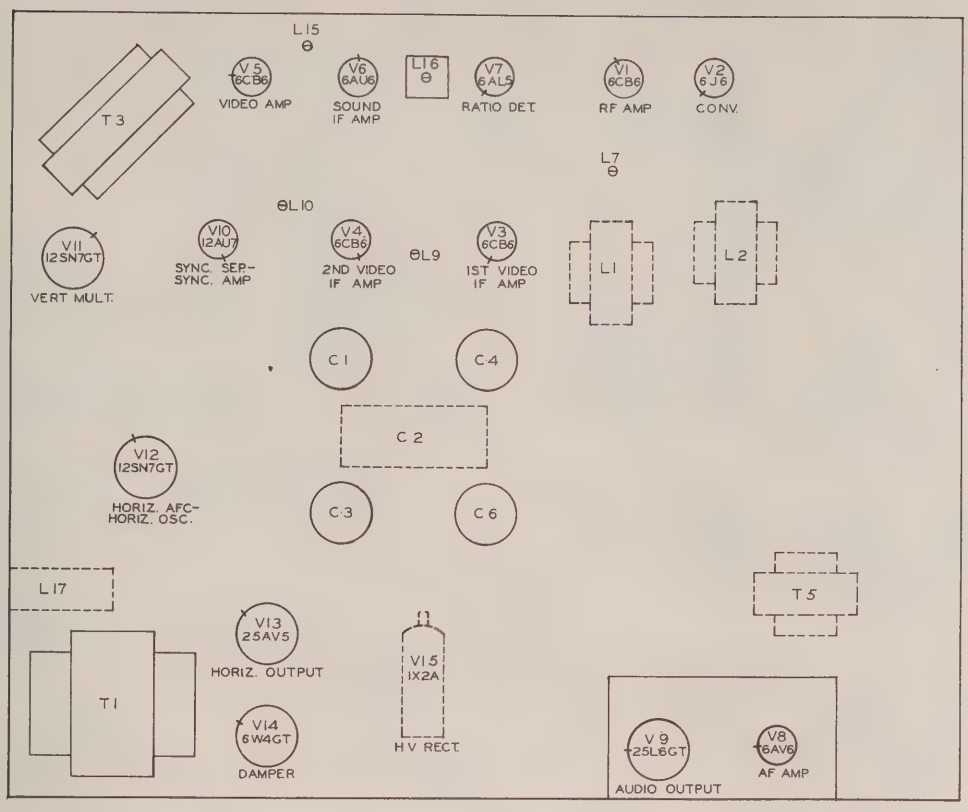
MODEL 17810M



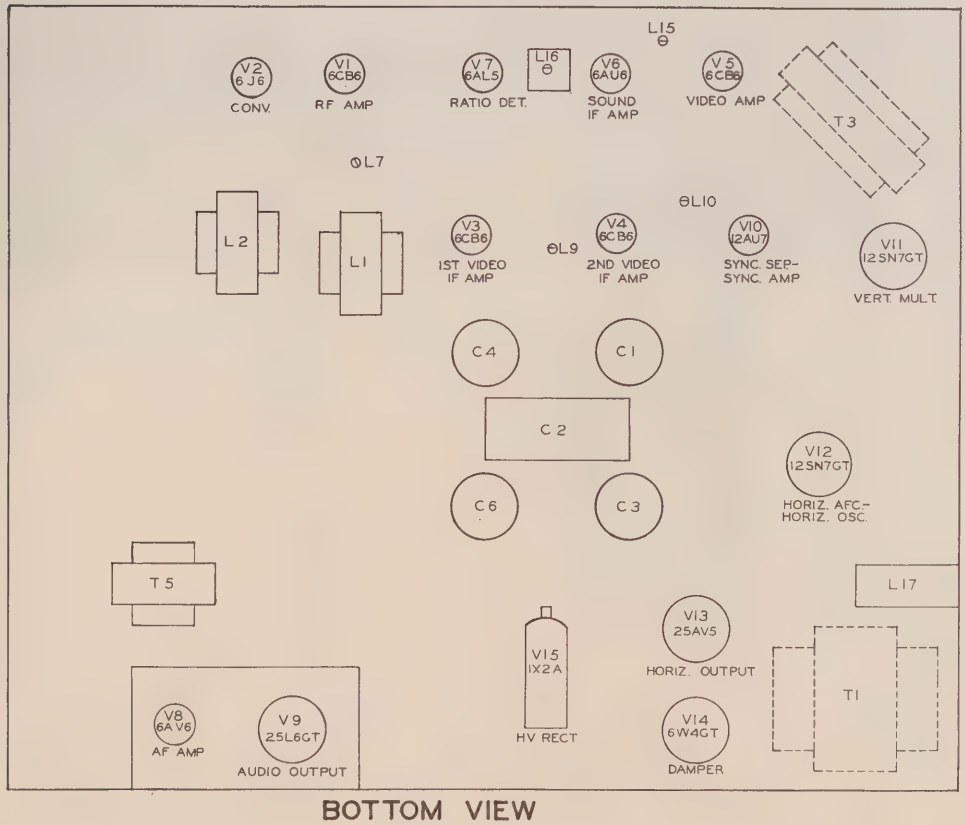
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25.75MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain 2 volt reading.
2.	"	"	23.75MC	"	"	A2	"
3.	"	"	24.75MC	"	"	A3	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.75MC 26.25MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1, A2, and A3 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD.	High side to pin 1, (Grid) of 6CB6, (V5). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A4, A5	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to Point (C). Common to chassis.	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD.	High side to pin 1, (Grid) of 6CB6, (V5). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	ANy	Vert. Amp. to Point (B). Low side to chassis.	A4, A5	Disconnect stabilizer capacitor C10. Adjust for maximum amplitude and symmetry as per figure 2.
6.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A6	Reconnect capacitor C10. Adjust A6 so 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A5 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A7. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A7 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A8	Adjust to place video marker at 50% on response curve as shown in figure 4.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A9	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A10	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A11	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A12	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A13	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A14	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A15	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A16	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A17	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A18	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A19	

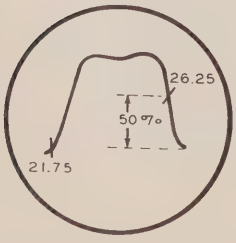


FIG. 1

FIG. 2

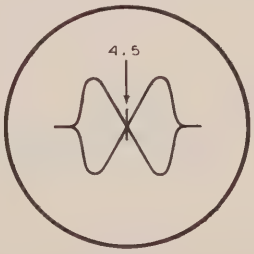


FIG. 3

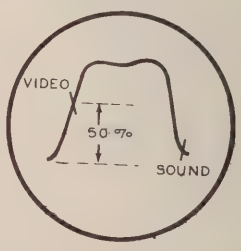


FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point Ⓓ. Low side to chassis.	A20, A21 A22	Adjust for response curve similar to figure 5, with markers above 90%.
9.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 5. If markers fall below 70% on any channel make slight adjustment of A20, A21, and A22 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

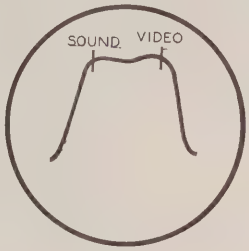


FIG. 5

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Turn the horizontal hold control to the mid-position of its range.
Adjust the horizontal range slug, (B1), until the picture synchronizes horizontally. Switch to another channel and back again, if the picture does not immediately fall into synchronization retouch B1 and repeat the check.
If the above condition cannot be obtained proceed as follows.
Connect a VTVM between pin 5 of V13 and chassis.
Adjust the horizontal drive trimmer, (B2), until the VTVM reads between -22.5 and-25 volts.
Connect the vertical input of an oscilloscope through a 47KΩ resistor to terminal C of L17.
Adjust the waveform adjustment, (B3), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in figure 6. If necessary during adjustment of B3, adjust B1 to keep the picture synchronized.
Repeat the pull-in check above and retouch B1 if necessary.
Adjust the width slug, (B4), until the picture is slightly wider than necessary to fill the mask horizontally.
Adjust the horizontal linearity slug, (B5), until the picture is symmetrical from left to right.
Since both width and horizontal linearity are effected by the drive trimmer, it may be necessary to retouch B2 for optimum results.

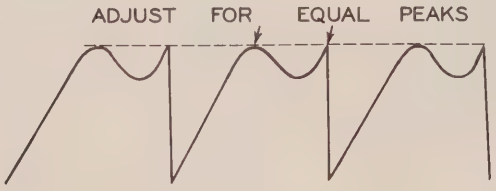


FIG. 6

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove seven wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Remove five metal screws from chassis. Remove chassis.
6. Remove four 11/32" hex nuts from speaker. Remove speaker.

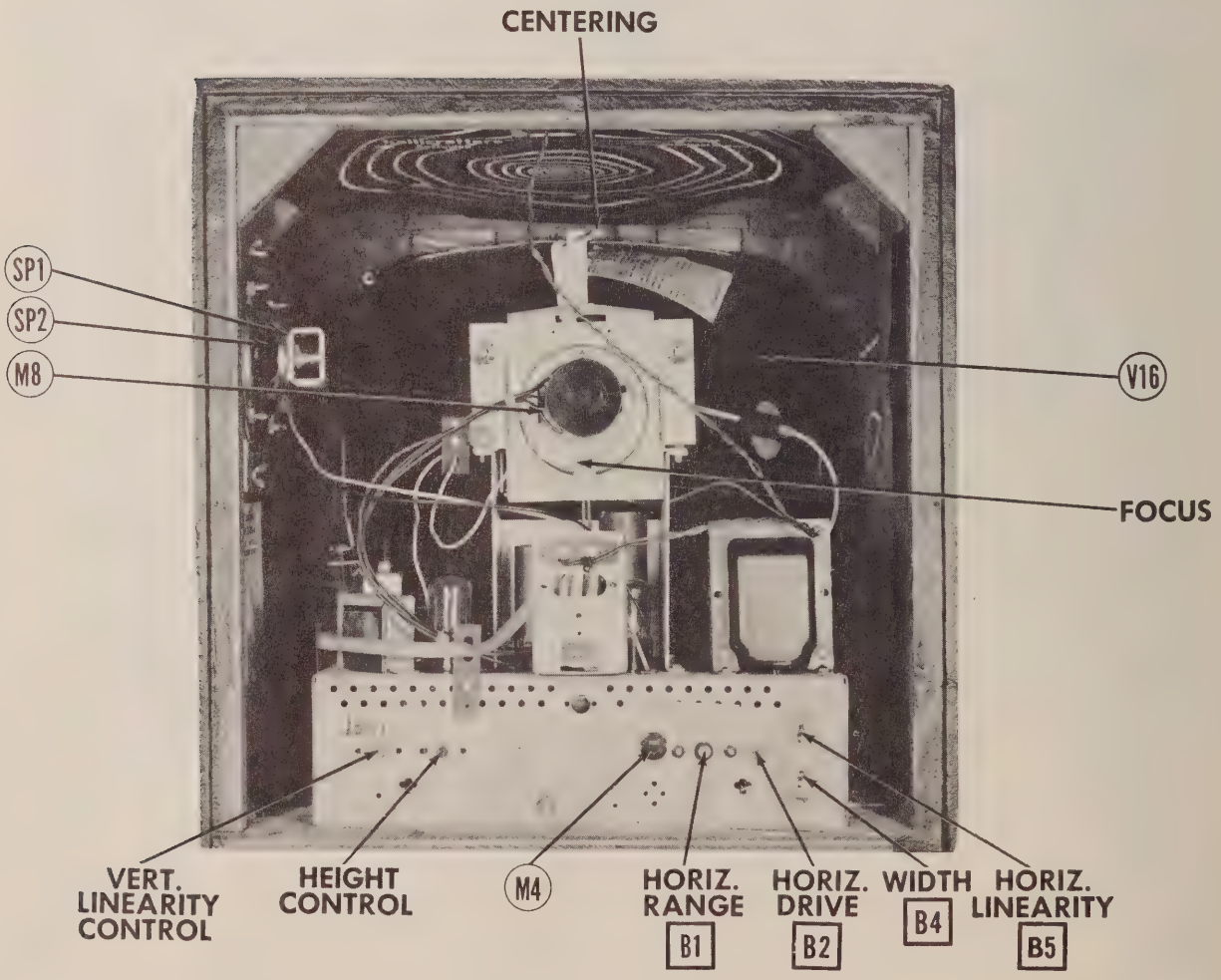
NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

RESISTANCE MEASUREMENTS

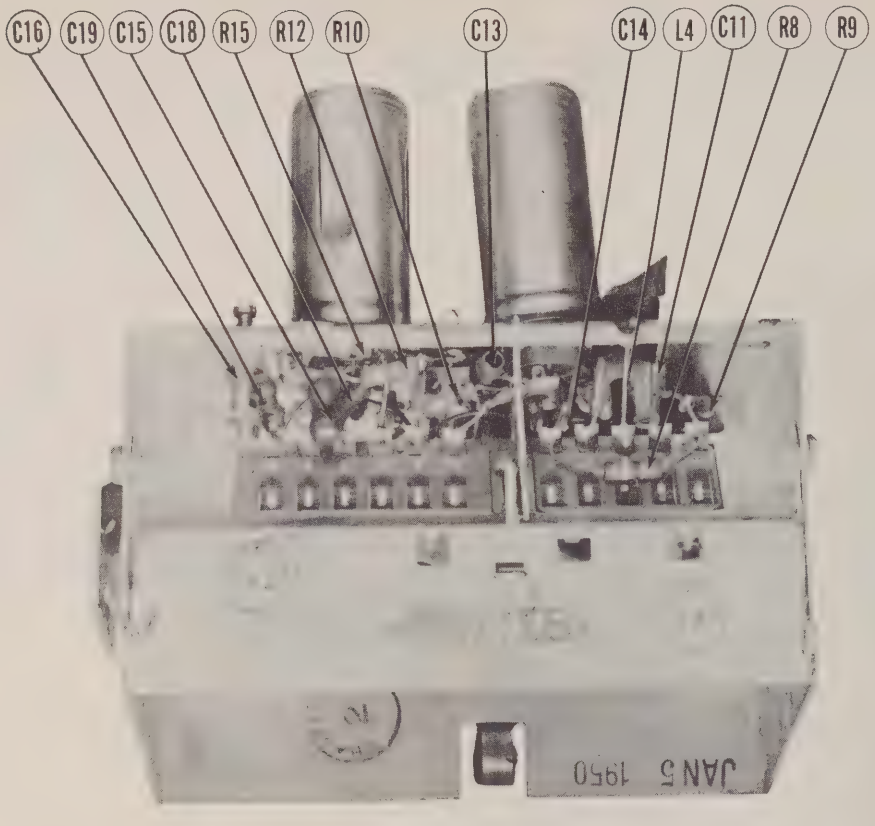
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1Meg	0Ω	.1Ω	0Ω	■2.4KΩ	■2.4KΩ	0Ω		
V 2	6J6	■4.9KΩ	■15KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	47Ω	3.8Ω	6Ω	†75Ω	■100Ω	0Ω		
V 4	6CB6	.2Ω	150Ω	6Ω	8Ω	†175Ω	■0Ω	0Ω		
V 5	6CB6	270KΩ	410Ω	14Ω	12Ω	†9KΩ	■0Ω	410Ω		
V 6	6AU6	■1.1Ω	■150Ω	12Ω	10Ω	†8.3KΩ	†8.3KΩ	■150Ω		
V 7	6AL5	10KΩ	10KΩ	3.8Ω	0Ω	1Meg	0Ω	1Meg		
V 8	6AV6	5.8Meg	0Ω	.1Ω	0Ω	0Ω	0Ω	†390KΩ		
V 9	25L6GT	Inf.	17Ω	†425Ω	†165Ω	180KΩ	Inf.	12Ω	7KΩ	
V 10	12AU7	■32KΩ	2.5Meg	0Ω	10Ω	10Ω	■8.5KΩ	■1Meg	0Ω	8Ω
V 11	12SN7GT	780KΩ	#3.1Meg	0Ω	2.2Meg	#2.1KΩ	1.7KΩ	16Ω	14Ω	
V 12	12SN7GT	300KΩ	#110KΩ	0Ω	200KΩ	39KΩ	82KΩ	17Ω	16Ω	
V 13	25AV5	470KΩ	12Ω	100Ω	Inf.	#23Ω	Inf.	3.5Ω	†12KΩ	
V 14	6W4GT	Inf.	Inf.	130KΩ	Inf.	†110Ω	Inf.	#0Ω	#.1Ω	
V 15	1X2A	PINS 1-9 HAVE INF. RESISTANCE								Top Cap #1KΩ
V 16	17BP4A	0Ω	■60KΩ	PIN 10 #10KΩ	PIN 11 ■150KΩ	PIN 12 .1Ω				

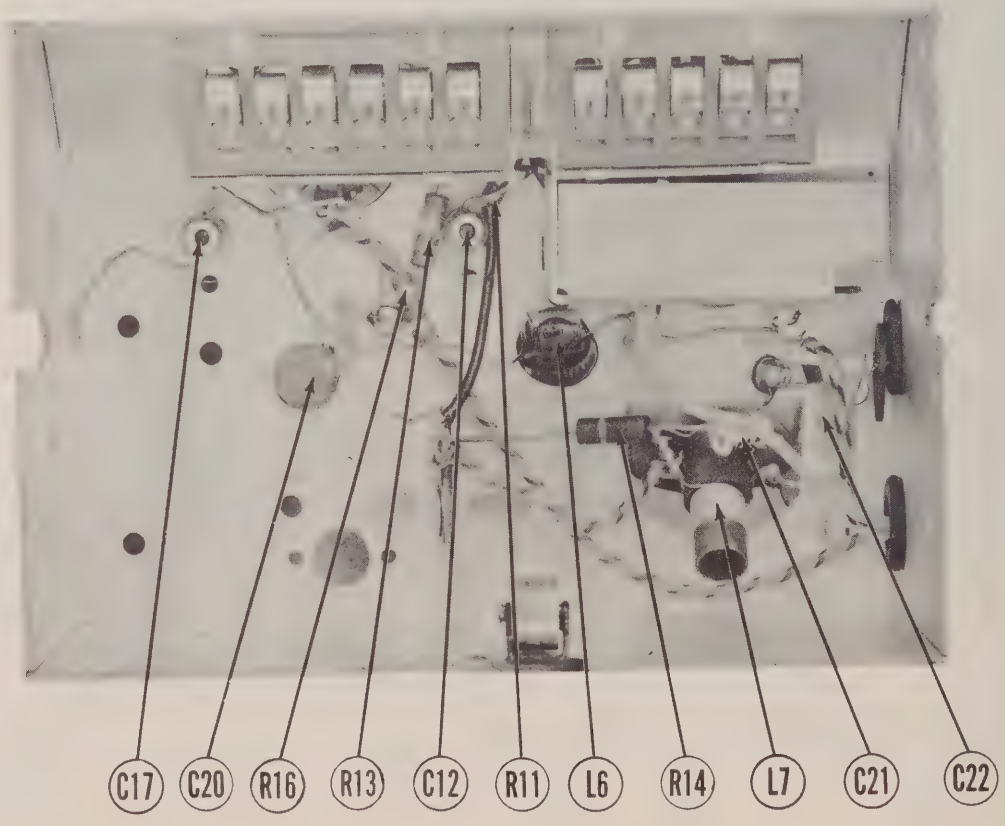
ALL CONTROLS SET FOR NORMAL OPERATION
† MEASURED FROM OUTPUT OF M1
■ MEASURED FROM 145 VDC LINE
MEASURED FROM PIN 3 OF V14



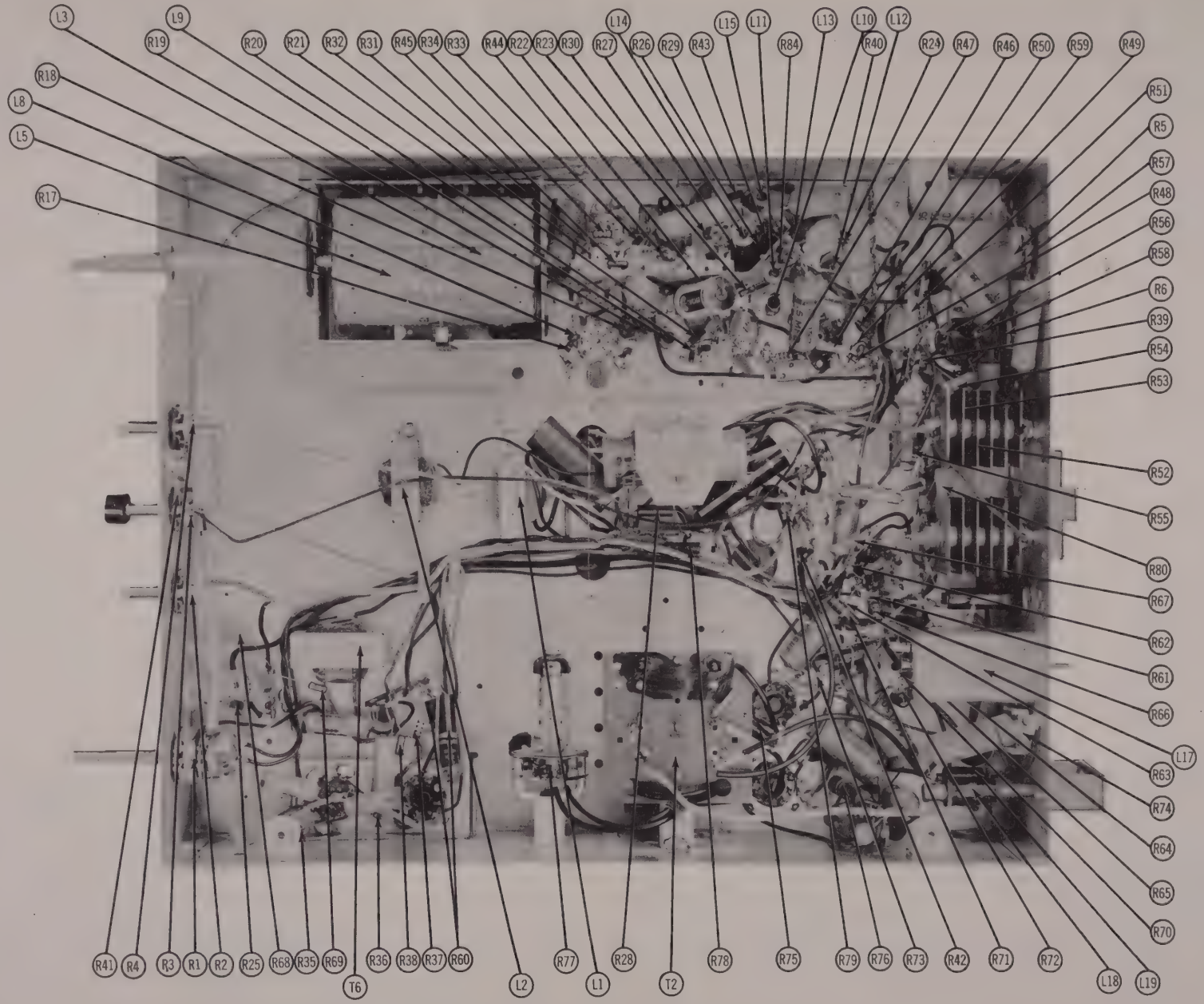
CABINET-REAR VIEW



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	90X6CB6	6CB6	7CM	
V2	Converter	90X6J6	6J6	7BF	
V3	1st. Video IF Amp.	90X6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	90X6CB6	6CB6	7CM	
V5	Video Amplifier	90X6CB6	6CB6	7CM	
V6	Sound IF Amplifier	90X6AU8	6AU8	7BK	
V7	Ratio Detector	90X6AL5	6AL5	6BT	
V8A	AF Amplifier	90X6AV6	6AV6	7BT	
B	AF Amplifier	90X6SQ7	6SQ7	8Q	
V9	Audio Output	90X25L6GT	25L6GT	7AC	
V10	Sync. Separator - Sync. Amplifier	90X12AU7	12AU7	9A	
V11A	Vert. Oscillator-Vert Amplifier	90X12SN7GT	12SN7GT	8BD	
B	Vert MV	90X12BH7	12BH7	8BD	
V12	Horiz. AFC-Horiz-Oscillator	90X12SN7GT	12SN7GT	8BD	
V13	Horiz. Output	90X25AV5	25AV5	9CK	
V14	Damper	90X6W4GT	6W4GT	4CG	
V15	HV Rectifier	90X1X2A	1X2A	9Y	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: HALLICRAFTERS PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V16	17BP4	17BP4	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	80	150	45B178	PRS150/40-40		UPE8015		TVA-1418	Voltage Doubler
C2	80	150	45B178			UPE8015		TVA-1418	Voltage Doubler
C3A	60	300	45B179	E58B55		UP5530		TVL-3642	Filter
B	60	300				BR5035			Filter
C	60	300							Decoupling
C4A	10	450	45B182	PRS450/10-10		BRD1145A		TVA-2722	Decoupling
B	10	450							Not used
C5	100	50	45A105	PRS50/100		BRH501		TVA-1310	Vert. Amp. Cathode
C6	60	150	45B180	PRS150/30-30		BR6015		TVA-2434	Audio Output Dec.
C7	100	10	45B170	PRS12/100		BRH121A		TVA-1130	Video Amp. Cathode
C8	8	475	45B184	PRS500/8		BR850A		TVA-1902	Decoupling
C9	8	475	45A103	PRS500/8		BR850A		TVA-1902	Decoupling
C10	5	50	45B175	PRS150/4		BR550		TVA-1303	Stabilizing
C11	3-9				829-10				Variable Trimmer
C12	.5-3				829-3				Variable Trimmer
C13	120		SI120	D6-121			GP2K-121	5GA-T12	RF Amp. Decoupling
C14	1000		SI1000	D6-102			GP1K-102	5HK-D1	RF Amp. Fil.
C15	100		SI100	D6-101			GP1K-101	5GA-T1	RF Coupling
C16	.5-3			829-3					Variable Trimmer
C17	.5-3			829-3					Variable Trimmer
C18	20			TCN-20			NP0K-200		Osc. Grid Cap.
C19	10		SI10NP0	TCZ-10			NP0K-100	5TCC-Q1	Fixed Trimmer
C20A	1000		BPD-2X001	DD-2-102		822-004	811-005	5HK-2D1	Conv. Fil.
B	1000								RF Bypass
C21	10		SI10NP0	TCZ-10			NP0K-100	5TCC-Q1	Fixed Trimmer
C22	120		SI120	D6-121			GP2K-121	5GA-T12	IF Coupling
C23	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Plate
C24	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Screen
C25	.05	600	46AY503J	P688-05	DF-503	PTE685		6TM-S5	RF Bypass
C26	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Plate
C27	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Screen
C28	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Cathode
C29	5000		47A168	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Fil.
C30	5		47B20050K5	SI5NP0	TCZ-4.7		NP0K-D50		Video Det. Filter
C31	.5	50	46A177	P288-5		GT2P5		2TM-P5	AGC Filter
C32	.5	25	46A177	P288-5		GT2P5		2TM-P5	Video Coupling
C33	.05	600	46AY503J	P688-05	DF-503	PTE685		6TM-S5	Video Coupling
C34	2.2		47A190-4	SI2.2NP0	TCZ-2.2		NP0K-2R2		Sound IF Coupling
C35	47			SI47N750	TCN-47		N750K-470	5TCU-Q47	Fixed Trimmer
C36A	4000		47A218	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	Sound IF Decoupling
B	4000				D6-402	1D5D4			Sound IF Cathode Dec.
C37	330		47B20331K5	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C38	1000		47B20A102M5	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	De-emphasis
C39	.01	200	46AU103J	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C40	220	500	47X20B221K	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	AF Amp. Plate
C41	.005	600	46AY502J	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C42	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C43	.05	600	46AY503J	P688-05	DF-503	PTE685		6TM-S5	Sync. Coupling
C44	220	500	47X20B221K	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	Sync. Sep. Grid
C45	100	500	47X20B101M	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Sync. Sep. Plate
C46	.5	25	46A177	P288-5		GT2P5		2TM-P5	Sync. Coupling
C47A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		+49B015	P688-005	+PC-100	PTE6D5	GP2-333-502	+101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C48	.002	600	46AZ202E	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Vert. Osc. Grid Cap.
C49	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Osc. Grid Cap.
C50	.05	600	46AY503J	P688-05	DF-503	PTE685		6TM-S5	Vert. MV Feedback
C51	.005	600	46AY502J	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Feedback Net.
C52	.005	600	46AY502J	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Feedback Net.
C53	1000	500	47A227	1464-001		1R5D1		MS-21	Vert. Feedback Net.
C54	.05	600	46AY503J	P688-05	DF-503	PTE685		6TM-S5	Vert. Sweep Coupling
C55	.02	600	46AY203J	P688-02	DF-203	PTE6S2		6TM-S2	Vert. Sweep Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	.05	600	46AY503J	P688-05	DF-503	PTE685		6TM-S5	Integrator Net.
C57	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. MV Decoupling
C58	390		47B20A391M5	SI390	D6-391	5W5T4	GP2K-390	1FM-34	Horiz. Sync. Coupling
C59	.5	200	46AT504J	P288-5		GT2P5		2TM-P5	AFC Filter
C60	.05	200	46AU503J	P288-05	DF-503	PTE485		2TM-S5	AFC Filter
C61	.1	300	46AU104J	P288-1	DF-104	PTE4P1		2TM-P1	Horiz. Osc. Grid Cap. †
C62	100	500		1469-0001		5R5T1		MS-31	Horiz. Osc. Grid Cap. †
C63	1000		47B20A102M5	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Feedback Net.
C64	1000		47B20A102M5	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Feedback Net.
C65	.005	600	46AY502J	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. Feedback Net.
C66	.01	400	46BR103E4	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Fixed Trimmer
C67	1000	500	47X20B102K	1464-001		1R5D1		MS-21	Horiz. Discharge
C68	.005	600	46AY502J	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. Sweep Coupling
C69	.05	600	46AY503J	P688-05	DF-503	PTE685		6TM-S5	Horiz. Output Screen
C70	.25	200	46AT254J	P488-25		GT2P25		2TM-P25	Horiz. Output Cathode
C71	.05	600	46AY503J	P688-05	DF-503	PTE685		6TM-S5	RF Bypass
C72	150	500	47X20B151K	1468-00015	D6-151	5W5T15	GP2K-151	1FM-315	Damper Cathode *
C73	.1	600	46AY104J	P688-1	DF-104	PTE6P1		6TM-P1	Decoupling
C74	.02	600	46AY203J	P688-02	DF-203	PTE6S2		6TM-S2	Damper Filter
C75	.035	600	46AY353J						Damper Filter
C76	1000		47B20A102N5	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C77	.01	600	46BR103L6	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C78	.01	600	46BR103L6	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter

* Not used in all models.
† Some models use 150MMF. in this application. (Part # 47X20B151K)
* Items C47A, C47B, C47C, R51A, R51B, R51C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	2500Ω	½	25B902	Concentrikit	RTV-266	SBB-673-S	Contrast Control - Panel
B	1Meg			B11-112 †			Volume Control - Rear
C	Shaft end			B13-137 †			Attach per instructions in "Concentrikit
D	Switch			E202 †			
R2A	50KΩ	½	25A901	75-1 †	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Q11-123	KSS-3	AK-4	Attach to R2A per instructions
R3A	50KΩ	½	25A901	Not req.	AG-44-S	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	1Meg	½	25A900	Q11-137	AG-61-S	AN-69	Vertical Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R4A per instructions
R5A	2500Ω	½	25B899	Q11-112	AM-15-S	AN-7	Vertical Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	2.5Meg	½	25B71i	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AN-83	Attach to R6A per instructions.
R7	2500Ω	4	25B708				Focus Control - Wire Wound - See Note

† Additional parts to be used with "Concentrikit.
Note: Not used in all models.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R8	3900Ω	½		BTS-3900	Antenna Coil Shunt
R9	47KΩ	½		BTS-47K	AGC Network
R10	10KΩ	½		BTS-10K	RF Coil Shunt
R11	2200Ω	½		BTS-2200	RF Amp. Decoupling
R12	4700Ω	½		BTS-4700	Mixer Grid
R13	220KΩ	20% ½		BTS-220K	Mixer Grid
R14	15KΩ	20% ½		BTS-15K	Mixer Plate
R15	10KΩ	½		BTS-10K	Osc. Grid
R16	4700Ω	½		BTS-4700	Osc. Plate
R17	47Ω	½	23X20X470K		1st. Video IF Amp. Cathode
R18	100Ω	½	23X20X101K	BTS-100	Decoupling
R19	100Ω	½	23X20X101K	BTS-100	Decoupling
R20	10KΩ	20% ½	23X20X103K	BTS-10K	2nd. Video IF Transformer Shunt
R21	150Ω	20% ½	23X20X151M	BTS-150	2nd. Video IF Amp. Cathode
R22	100Ω	½	23X20X101K	BTS-100	2nd. Video IF Amp. Plate Decoupling
R23	1Meg	½	23X20X105K	BTS-1Meg	AGC Network
R24	270KΩ	½		BTS-270K	Video Amp. Grid - See Note 2
R25	150Ω	20% 1	23X20X151M	BTS- 150	Video Amp. Cathode
R26	3300Ω	1	23X30X332K	BTA-3300	Video Amp. Plate
R27	3300Ω	1	23X30X332K	BTA-3300	Video Amp. Plate
R28	2200Ω	20% 1	23X30X222M	BTA-2200	Video Amp. Plate Decoupling
R29	150Ω	½	23X20X151M	BTS-150	1st. Sound IF Amp. Cathode
R30	8200Ω	½	23X20X822K	BTS-8200	1st. Sound IF Amp. Decoupling
R31	10KΩ	5% ½	23X20X103J		Ratio Detector Diode Load
R32	10KΩ	5% ½	23X20X103J		Ratio Detector Diode Load
R33	270Ω	½	23X20X271K	BTS-270	Balancing
R34	33KΩ	½	23X20X333K	BTS-33K	De-emphasis
R35	6.8Meg	20% ½	23X20X685M	BTS-6.8Meg	AF Amp. Grid
R36	390KΩ	½	23X20X394K	BTS-390K	AF Amp. Plate
R37	390KΩ	5% ½	23X20X394J		Output Grid
R38	270KΩ	5% ½		BTS-270K	Voltage Divider
R39	39KΩ	½	23X20X393K	BTS-39K	Picture Tube Grid
R40	150KΩ	½	23X20X154K	BTS-150K	Picture Tube Cathode
R41	47KΩ	½	23X20X473K	BTS-47K	Voltage Divider
R42	10KΩ	½	23X20X103K	BTS-10K	Decoupling
R43	10KΩ	½	23X20X103K	BTS-10K	Isolation
R44	270KΩ	½	23X20X274K	BTS-270K	Sync. Separator Grid - See Note 2
R45	2.2Meg	20% ½	23X20X225M	BTS-2.2Meg	Sync. Separator Grid
R46	330KΩ	½	23X20X334K	BTS-330K	Sync. Separator Plate
R47	33KΩ	½	23X20X333K	BTS-33K	Voltage Divider
R48	1Meg	20% ½	23X20X105M	BTS-1Meg	Sync. Amp. Grid
R49	15KΩ	½	23X30X153K	BTA-15K	Sync. Amp. Plate
R50	8200Ω	20% 1	23X30X822K	BTS-8200	Voltage Divider
R51A	22KΩ	½		BTS-22K	Integrator Network
B	8200Ω	½	+49B105	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R52	500KΩ	½		BTS-560K	Vertical MV Grid
R53	270KΩ	5% ½		BTS-270K	Vertical Feedback Network - See Note 2
R54	47KΩ	½	23X20X473K	BTS-47K	Vertical Feedback Network
R55	120KΩ	½		BTS-120K	Vertical Feedback Network - See Note 3
R56	2.2Meg	20% ½	23X20X225M	BTS-2.2Meg	Vertical MV Grid
R57	470Ω	½		BTS-470	Vertical MV Cathode - See Note 4
R58	2.2Meg	20% ½	23X20X225M	BTS-2.2Meg	Vertical MV Plate
R59	8200Ω	½	23X20X822K	BTS-8200	Vertical Retrace Blanking
R60	12KΩ	3	24A931		Voltage Divider - See Note 7
R61	120KΩ	½		BTS-120K	Horiz. AFC Grid - See Note 3
R62	82KΩ	½		BTS-82K	Horiz. AFC Cathode - See Note 5
R63	8200Ω	½	23X20X822K	BTS-8200	AFC Filter
R64	12KΩ	20% ½	23X20X123K	BTS-12K	Horiz. Feedback Network
R65	12KΩ	20% ½	23X20X123K	BTS-12K	Horiz. Feedback Network
R66	39KΩ	½	23X20X393K	BTS-39K	Horiz. Feedback Network
R67	150KΩ	½	23X20X154K	BTS-150K	Horiz. Osc. Grid
R68	47KΩ	½	23X20X473K	BTS-47K	Horiz. Osc. Grid
R69	47KΩ	½	23X20X473K	BTS-47K	AFC Filter
R70	8200Ω	½	23X20X822K	BTS-8200	Horiz. Osc. Transformer Shunt
R71	120KΩ	1		BTS-120K	Horiz. Osc. Plate - See Note 3
R72	39KΩ	½	23K20X393K	BTS-39K	Horiz. Osc. Coil Shunt
R73	68Ω	½			Parasitic Suppressor - See Note 6
R74	470KΩ	2	23X20X474K	BTS-470K	Horiz. Output Grid
R75	100Ω	2	23X40X101K		Horiz. Output Cathode
R76	12KΩ	2	23X40X123K	BTB-12K	Horiz. Output Screen
R77	3.3Ω	½	23X30X033K		HV Filament
R78	15Ω	1	23X30X150M		Decoupling
R79	1000Ω	2	23X40X102K	BTB-1000	Decoupling - See Note 8
R80	20Ω	10	24A927	1 3/4A-20	Surge Limiter - Wire Wound
R81	10KΩ	2	23X40X103K	BTB-10K	Focus Control Shunt - See Note 1
R82	7500Ω	10	24BG752D		Voltage Divider - Wire Wound - See Note 1
R83	7500Ω	10	24BG752D		Voltage Divider - Wire Wound - See Note 1
R84	8200Ω	½		BTS-8200	Video Detector Load
R85	100KΩ	½	23X20X104M	BTS-100K	Damper Filter - See Note 1

* Items R51A, R51B, R51C, C47A, C47B, C47C are combined in one unit.
Note 1 Not used in all models.
Note 2 Some models use 220KΩ resistor in this application.
Note 3 Some models use 100KΩ resistor in this application.
Note 4 Some models use 560Ω resistor in this application.
Note 5 Some models use 47KΩ 1Watt resistor in this application.
Note 6 Some models use 47Ω resistor in this application.
Note 7 Some models use resistors in parallel to obtain desired value.
Note 8 Models that use a 12SN7GT for vertical multivibrator use a 4700Ω, 5Watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ④ 1.2A	115VAC .925	6.3VAC ④ .9A	6.3VAC ④ 1.2A			P-3169 ④	

④ Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	1063Ω Taps 4Ω, 52Ω, 58Ω 73Ω	0Ω	55C156 ① 55C171 ②				Horiz. Output Transformer
T3	1.1KΩ Tap 13Ω		55A166 or 55B128	A-8112	A-3037 ③	TSO-5 ③	Vert. Output Transformer
T4A	32Ω		53A212 or				Horiz. Deflection Coils
B	58Ω		53C218				Vert. Deflection Coils
T5			51B1337 ⑤				Focus Coil

① Used with 25AV5 Horiz. Output Tube.
② Used with 25BQ6 Horiz. Output Tube.
③ Drill one new mounting hole.
⑤ Not used in all models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	2.5KΩ	2.9Ω	260Ω	.5Ω	55A157	A-3849	A-3025 ③	RO-2 ③	③ Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	PM	3.9Ω	85C103	8T105 Model P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.200A	73Ω	1.3 Henries	56B117	C-2325 ③	C-2994 ③	TR3300 ③	③ Drill one new mounting hole.
L2	.070A	90Ω	1.3 Henries	56B116	C-2325 ③	C-2994 ③	TR3300 ③	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	HALLICRAFTER PART No.		
L3	Ant. Coil	0Ω	0Ω			Part of Tuner Part # 1D1049
L4	Fil. Choke	0Ω				Part of Tuner Part # 1D1049
L5	RF, Mixer Grid & Osc. Coil	0Ω				Part of Tuner Part # 1D1049
L6	Fil. Choke	0Ω				Part of Tuner Part # 1D1049
L7	1st. Video IF	.9Ω				Part of Tuner Part # 1D1049
L8	RF Choke	3.7Ω		53A219		Wound on 82KΩ resistor
L9	2nd. Video IF	.2Ω	.2Ω	51A1288		
L10	3rd. Video IF	.3Ω	.3Ω	51A1289		
L11	Peaking	12Ω		51A1257		Wound on 15KΩ resistor
L12	Peaking	30Ω		51A1286		
L13	Peaking	18Ω		51A1285		Wound on 33KΩ resistor
L14	Peaking	18Ω		51A1284		
L15	Sound IF	1.1Ω		50B474		
L16	Ratio Det. Trans.	4.2Ω	.6Ω	50B473		Tap .8Ω
L17	Horiz. Osc.	75Ω	45Ω	51B1242		
L18	Width Coil	5.2Ω		51B1277		
L19	Horiz. Lin.	24Ω		51B1335		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	HALLICRAFTER PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.200A	27A155-D	NF-5	6Q4	
M2	.200A	27A155-D	NF-5	6Q4	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			HALLICRAFTERS PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M3	3AG Slo Blo	1/4A 125V	39A353	6A053	313.250	341001	
M4	3AG Pigtail	1.5A 250V	39A354		31801.5		

MISCELLANEOUS

ITEM No.	PART NAME	HALLICRAFTERS PART No.	NOTES
M5	RF Tuner	1D1049	
M6	Crystal	19B1246	1N60
M7A	Focus Magnet	21C123	
B	Focus Magnet	21C121	Alternate
C	Focus Magnet	21C118	Alternate
M8	Ion Trap	21A120	
B2	Trimmer	44A361	Horiz. Drive
	Knob	15C297	Off/On Volume
	Knob	15A299	Fine Tuning
	Knob	15D265	Contrast
	Knob	15D293	Channel Selector

MASCO
MODEL ME-8

MASCO
MODEL ME-8

TRADE NAME	Masco, Model ME-8
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th. St., Long Island City, New York
TYPE SET	AC Operated Audio Amplifier
TUBES (FOUR)	Types 6SF5 Mic. PRE-Amp., 6SJ7 AF Amp., 6L6G Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .575 Amp. at 117 Volts AC

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V1	Mic. Pre-Amplifier	6SF5	6SF5	6AB	
V2	AF Amplifier	6SJ7	6SJ7	8N	
V3	Power Output	6L6G	6L6G	7AC	
V4	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	8	450		PRS450/8		BR845A		TVA-1704	Filter
C2	8	450		PRS450/8		BR845A		TVA-1704	Filter
C3	16	450		PRS450/16		BR1645A		TVA-1708	Decoupling
C4	10	50		PRS50/10		BR105		TVA-1304	Bias Filter
C5	10	50		PRS50/10		BR105		TVA-1304	AF Amp. Cathode
C6	.005	600		P688-005	DF-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C7	.0056	600			D6-562		GP2-333-562		Audio Coupling †
C8	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	AF Amp. Screen
C9	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C10	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp.

† Some models use .005MFD. in this application.

CONTROLS

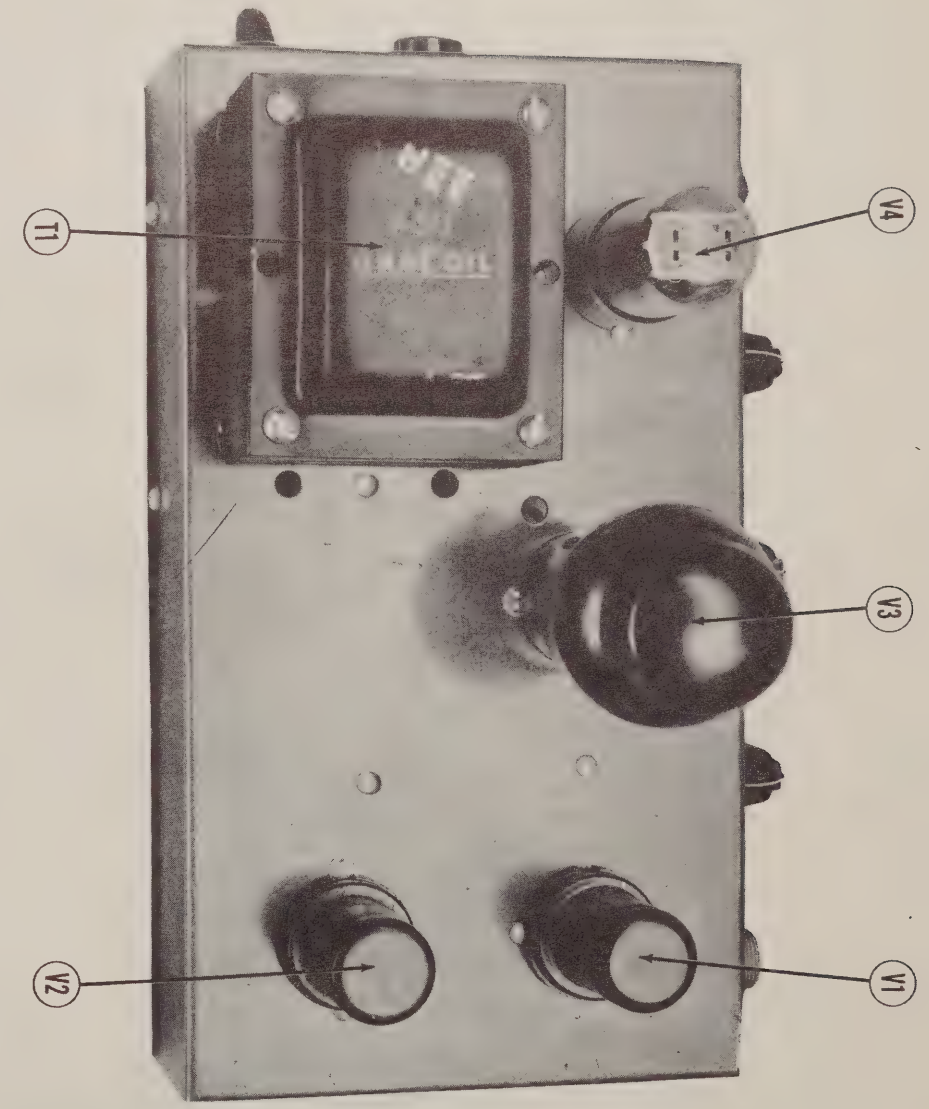
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½		Q13-133	AG-60-Z	B-60-S	Tone Control
B	Shaft			Not req.	RS-2	Not req.	Attach to R1A per instructions
C	Switch			76-1	SWB	Not req.	Attach to R1A per instructions
R2A	500KΩ	½	33-010-88	Q13-133	AG-60-Z	B-60	Phono Volume Control
B	Shaft		Not req.	Not req.	RS-2	Not req.	Attach to R2A per instructions
R3A	500KΩ	½	33-010-88	Q13-133	AG-60-Z	B-60	Mike Volume Control
B	Shaft		Not req.	Not req.	RS-2	Not req.	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
R4	15Meg	½		BTS-15Meg	Mike Pre-Amp. Grid
R5	270KΩ	½		BTS-270K	Mike Pre-Amp. Plate
R6	330KΩ	½		BTS-330K	AF Amp. Grid - See Note 1
R7	330KΩ	½		BTS-330K	AF Amp. Grid - See Note 1
R8	1000Ω	½		BTS-1000	AF Amp. Cathode
R9	1Meg	½		BTS-1Meg	AF Amp. Screen
R10	270KΩ	½		BTS-270K	AF Amp. Plate
R11	330KΩ	½		BTS-330K	Bias Network - See Note 2
R12	4700Ω	1		BTA-4700	Voltage Divider
R13	1Meg	½		BTS-1Meg	Feedback
R14	39Ω	1			Filament Dropping
R15	39Ω	1			Filament Dropping

Note 1 Some models use 250KΩ resistor in this application.
Note 2 Some models use 270KΩ resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② .575A	640VCT .092ADC	5VAC ② 2A	6.3VAC 1.8A	A-8-D	PM8409 ①	P-2952	

① Add series resistor if necessary

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	3.8KΩ	4Ω 8Ω 500Ω	150Ω	.43Ω .7Ω 25Ω	T-8		A-3028 ②		② Drill one new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∽)	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.125A	130Ω	3.2Henries	C-178				

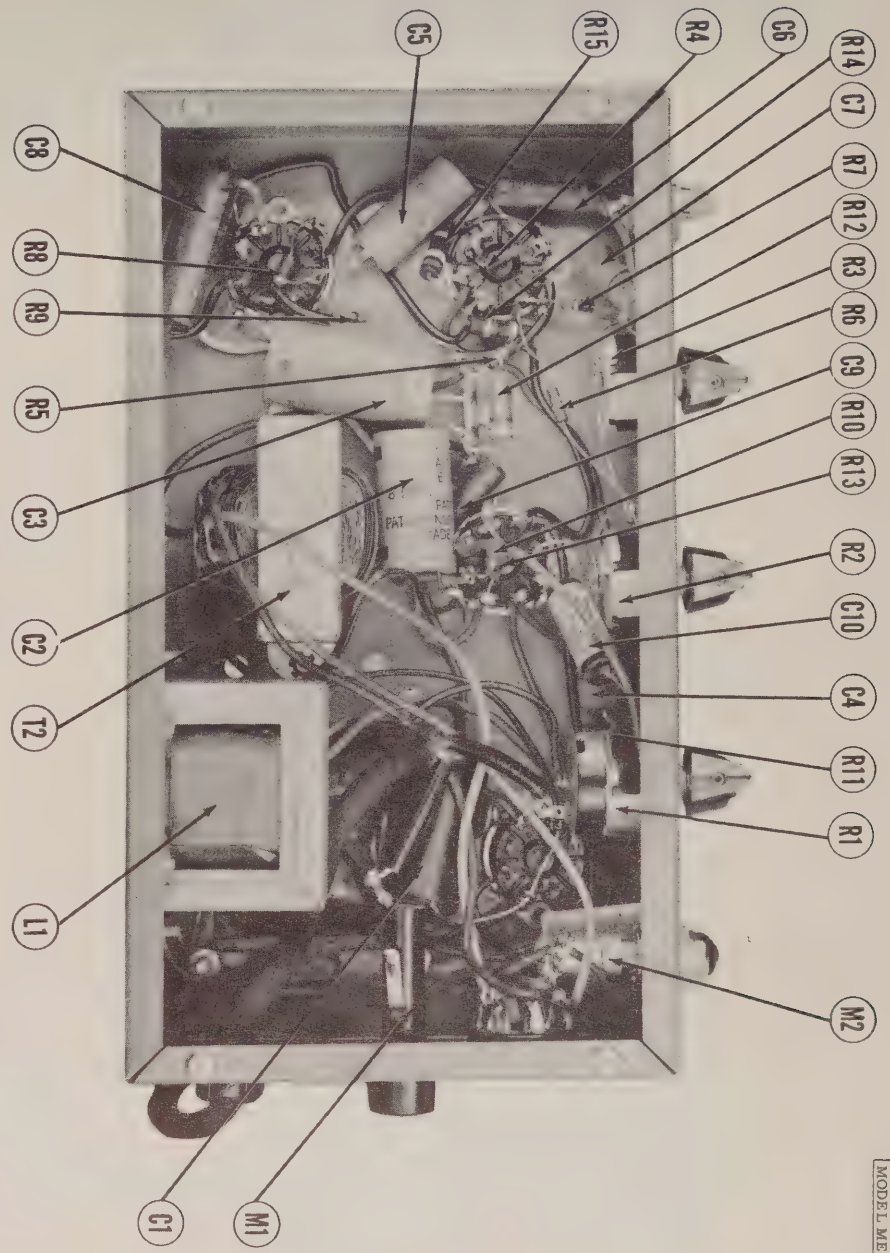
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			MASCO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	1Amp.			312001	341001	

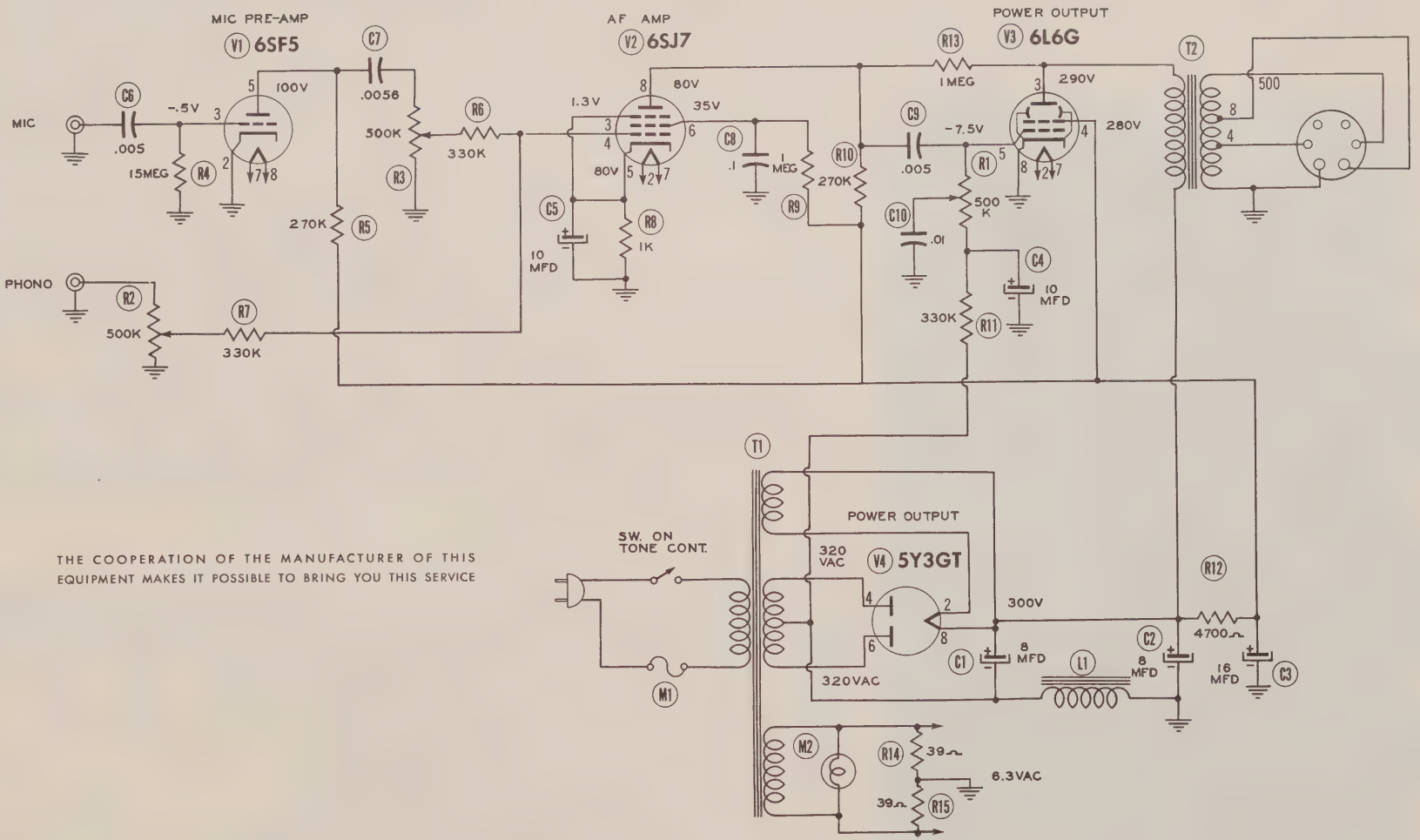
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MASCO PART No.		
M2	Bayonet	6-8	.15	Brown			Type # 47

CHASSIS—BOTTOM VIEW



MASCO MODEL ME-8



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SF5	0Ω	0Ω	15Meg	Inf.	†275KΩ	180KΩ	20Ω	20Ω
V 2	6SJ7	0Ω	20Ω	1KΩ	180KΩ	1KΩ	†1Meg	20Ω	†280KΩ
V 3	6L6G	0Ω	20Ω	†130Ω	†4.7KΩ	600KΩ	†280KΩ	20Ω	0Ω
V 4	5Y3GT	400Ω	30KΩ	Inf.	560Ω	400Ω	550Ω	Inf.	30KΩ

† MEASURED FROM PIN 8 OF V4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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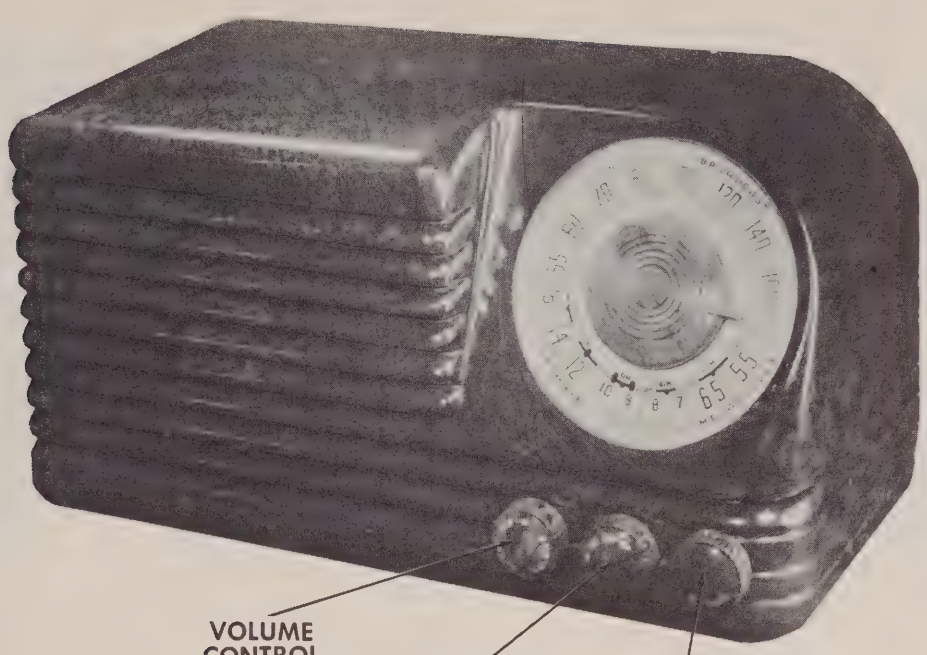
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

OLYMPIC
MODELS 9-435V, 9-435W

OLYMPIC
MODELS 9-435V, 9-435W



OLYMPIC
MODELS 9-435V, 9-435W

TRADE NAME	Olympic, Models 9-435V, 9-435W
MANUFACTURER	Olympic Radio & Television Corp., 34-01 38th. Ave., Long Island City, New York
TYPE SET	AC-DC Operated 2 Band superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC — RATING .26 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1610KC — SHORT WAVE 4.7MC-16.1MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer, parallel with base of dial.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD.	High side to pin 8, (Grid), of 12SA7, (V1) Low side to chassis.	455KC (400~ Mod.)	BC (CW)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.
2.		Loop	1600KC	"	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1500KC	"	1500KC	"	A6	"
4.		Loop	600KC	"	600KC	"	A7	Rock tuning gang while adjusting A7 for maximum output.
5.	400Ω carbon resistor	High side thru 400Ω to ant. terminal on loop.	15MC	SW (CCW)	15MC	"	A8, A9	Turn A8 fully clockwise (closed.) Then counter clockwise, to second point of maximum output. Adjust A9 for maximum output.
6.	"	"	5.5MC	"	5.5MC	"		Check dial calibration. If pointer is not near 5.5 on dial, repeat step 5.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	CO-1715	AFH2-14		UP4415		TVL-2428	▲ Filter
B	40	150							■ Filter
C2	.01	600	RCP10W6103A	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	RF Coupling *
C3	100	500	RCM20A101M	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	RF Coupling
C4	47	500	RCM20A470M	1469-0005	TCZ-47	5R5Q5	NP0L-470	MS-45	Osc. Grid Cap.
C5	4000	500	RCM30B402J	1464-004		1DR5D4			Fixed Padder
C6	.05	400	RCP10W4503A	P488-05	DF-503	PTE4S5		4TM-S5	Decoupling
C7	.02	400	RCP10W4203A	P488-02	DF-203	PTE4S2		4TM-S2	AVC Filter
C8A	220			SI220	D6-221	5W5T25	GP2K-221		Diode RF Filter
B	220			SI220	D6-221	5W5T25	GP2K-221	†100C1	Diode RF Filter
C9A	220								Diode RF Filter
B	2000								Audio Coupling
C	5000				♦PC-150				Audio Coupling
D	250								AF Amp. Plate
E									Output Grid
C10	.01	600	RCP10W6103A	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Output Plate *
C11	.05	400	RCP10W4503A	P488-05	DF-503	PTE4S1		4TM-S5	Line Filter
C12	.005	600	RCP10W6502A	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Line Isolation
C13	.1	400	RCP10W4104L¶	P488-1 ‡	DF-104 ‡	PTE4P1 ‡		4TM-P1 ‡	Line Isolation

* Not used in all models.
† Items C8A, C8B, R6 are combined in one unit. (In some models only)
♦ Items C9A, C9B, C9C, C9D, C9E, R7A, R7B, R7C are combined in one unit. (In some models only)
In models using separate components, C9A and C9E are omitted, C9B and C9C are .01MFD and C9D is 330MMF.
‡ When replacing this item, wind 12 turns #20 insulated wire on new component.
¶ When ordering, specify with RF choke.

CONTROLS

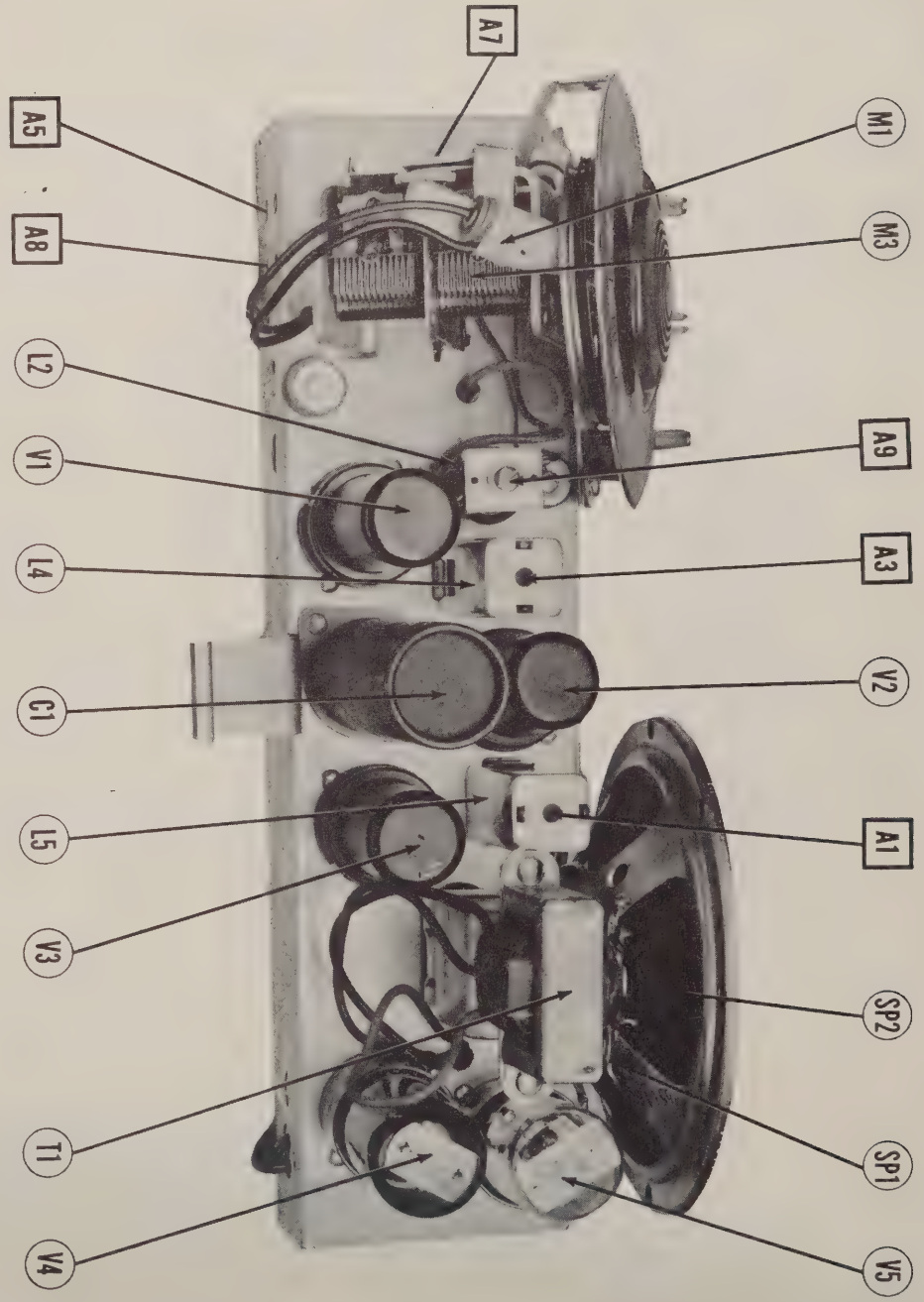
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	PT-102	Q13-133	AG-60-Z	BSK-60-S	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1Meg	½	REB-105M	BTS-1Meg	Mixer Grid
R3	22KΩ	½	REB-223M	BTS-22K	Osc. Grid
R4	2.2Meg	½	REB-225M	BTS-2.2Meg	AVC Network
R5	220KΩ	½	REB-224M	BTS-220K	Isolation
R6	47KΩ	½	†	BTS-47K	Diode RF Filter
R7A	10Meg	½	♦	BTS-10Meg	AF Amp. Grid
B	470KΩ	½		BTS-470K	AF Amp. Plate
C	470KΩ	½		BTS-470K	Output Grid
R8	150Ω	½	REB-151K	BTS-150	Output Cathode
R9	1000Ω	2	RED-102M	BTB-1000	Voltage Divider
R10	220Ω	1	REC-221K	BTA-220	Pilot Light Shunt

† Items R6, C8A, C8B, are combined in one unit. (In some models only)
♦ Items R7A, R7B, R7C, C9A, C9B, C9C, C9D, C9E, are combined in one unit. (In some models only).

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLYMPIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	1.9KΩ	3.5Ω	170Ω Tap 6Ω	.5Ω	Part of SK838-1	A-3330	A-3031	RO-3	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			OLYMPIC PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST105		
SP1	PM	3.5Ω	SK838-1	Model P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4½"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	OLYMPIC PART No.		
L1	Loop Ant.	2Ω	.2Ω	LP-937		Broadcast Band
L2	Ant. Coil	.4Ω	.2Ω	CL-940		Shortwave Band
L3A	Osc. Coil	.6Ω	5.5Ω	CL-933		Broadcast Band
B	Osc. Coil	.1Ω	.6Ω			Shortwave Band
L4	1st. IF	17Ω	17Ω	TR-1644		
L5	2nd. IF	17Ω	17Ω	TR-1644		

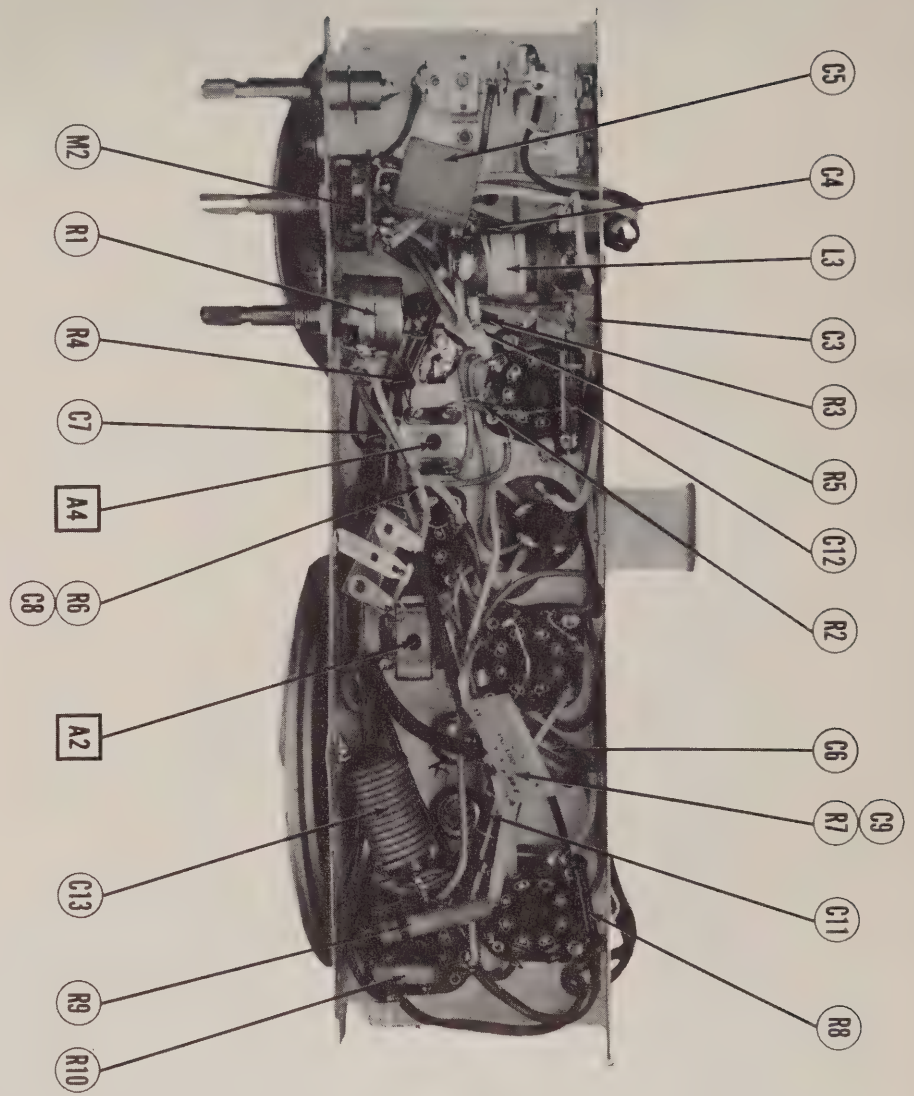
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					OLYMPIC PART No.		
M1	Bayonet	6-8	.15	Brown	BU-187		Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M2	Switch	SW-839	Band
M3	2 Gang Var. Cap.	CV-772	(15-455MMF, 15-455MMF)
A5 }	Dual Trimmer	CT-389	{ BC Osc. Adj.
A8 }			{ SW Osc. Adj.
A6	Trimmer	CT-939	BC Ant. Adj.
A7	Padder	CT-440	BC Osc. Padder
	Dial Scale	DL-934	
	Dial Pointer	PO-529W	Walnut
	Dial Pointer	PO-529V	Ivory

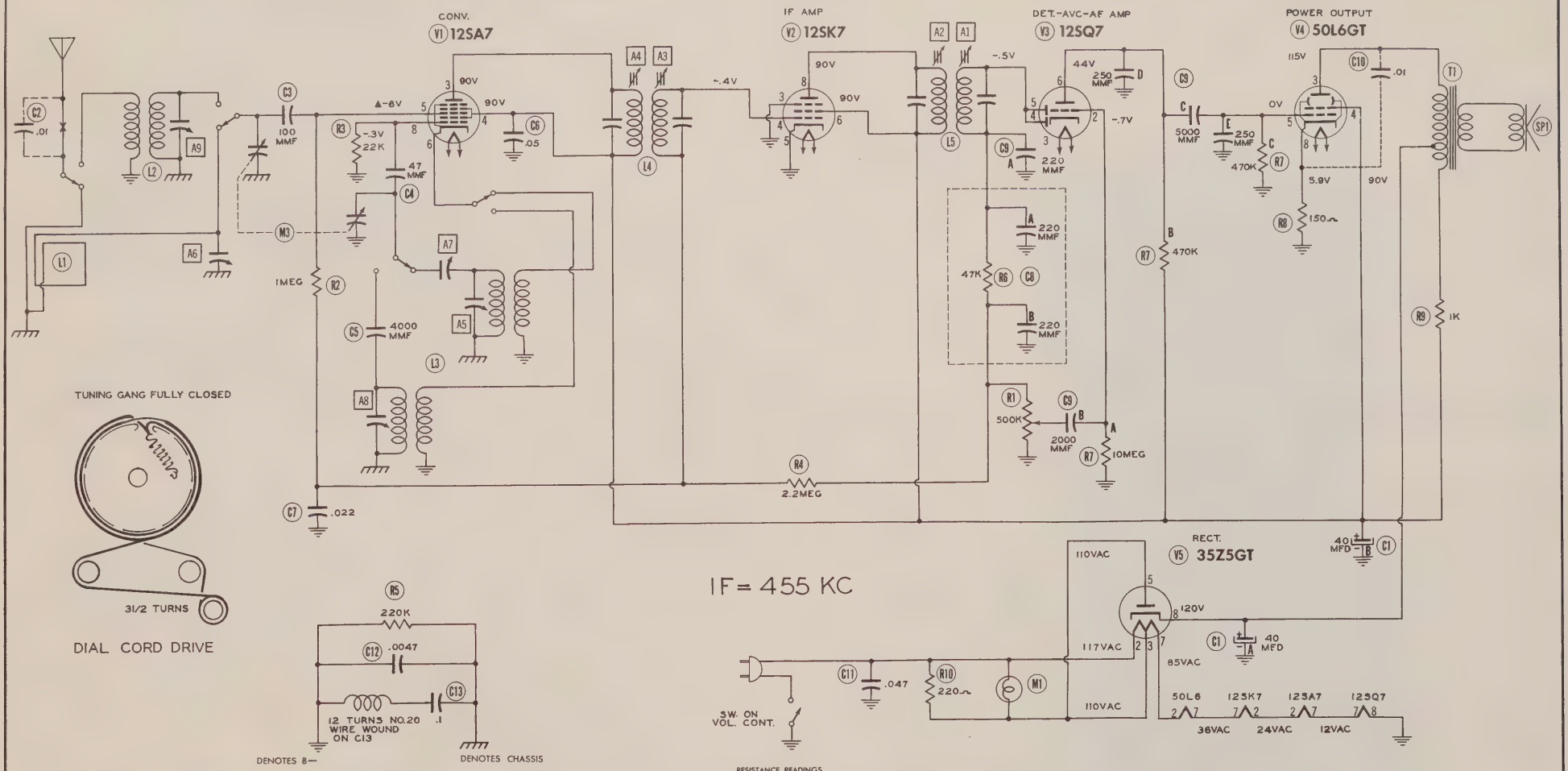
CHASSIS—BOTTOM VIEW



SET 152 FOLDER 11

OLYMPIC MODELS 9-435V

OLYMPIC MODEL 9-435V



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	■0Ω	24Ω	†1KΩ	†1KΩ	22KΩ	.6Ω	12Ω	3.7Meg
V 2	12SK7	■0Ω	24Ω	0Ω	2.7Meg	0Ω	†1KΩ	36Ω	†1KΩ
V 3	12SQ7	■0Ω	10Meg	0Ω	550KΩ	550KΩ	†470KΩ	12Ω	0Ω
V 4	50L6GT	Inf.	85Ω	†170Ω	†1KΩ	470KΩ	0Ω	36Ω	150Ω
V 5	35Z5GT	Inf.	120Ω	110Ω	0Ω	110Ω	†6Ω	85Ω	60KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V5
V & R TAKEN IN BROADCAST POSITION
■ MEASURED FROM CHASSIS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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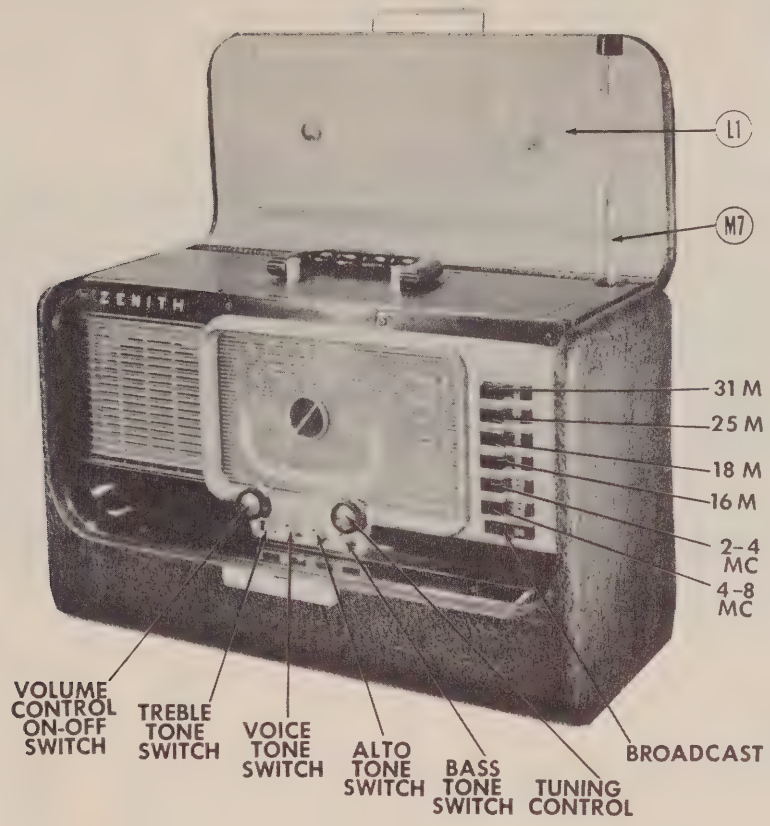
152-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

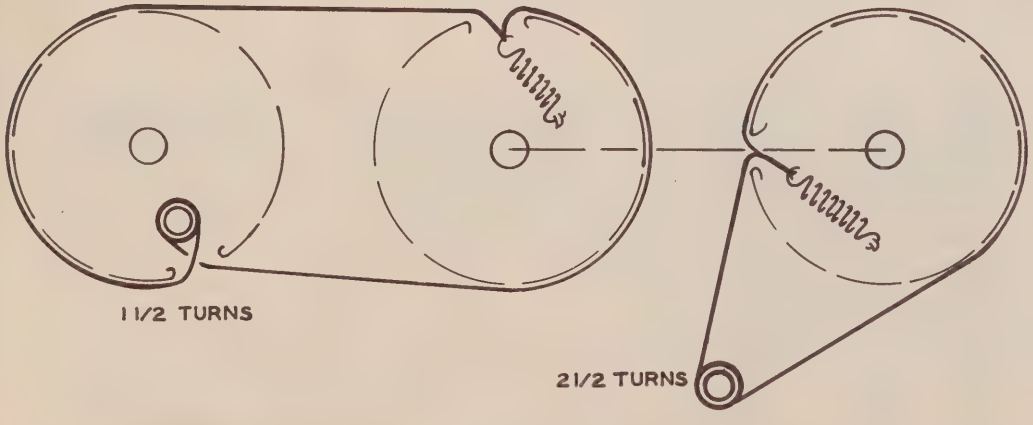
ZENITH
MODEL H500 (Ch. 5H40)

ZENITH
MODEL H500 (Ch. 5H40)



TRADE NAME	Zenith, Model H500 (Ch. 5H40)
MANUFACTURER	Zenith Radio Crop., 6001 Dickens Ave., Chicago, Illinois
TYPE SET	Three Power Operated Multi-Band Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1U4 RF Amp., 1L6 Converter, 1U4 IF Amp., 1U5 DET.-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply on Pack Form
RATING	.15 Amp. at 117 Volts AC or 70MA at 9 Volts DC and 20MA at 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE #1 4-8MC, #2 2-4MC, #3 17.4-18.2MC, #4 14.8-15.6MC, #5 11.5-12.1MC, #6 9.4-9.8MC

TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

ZENITH
MODEL H500 (Ch. 5H40)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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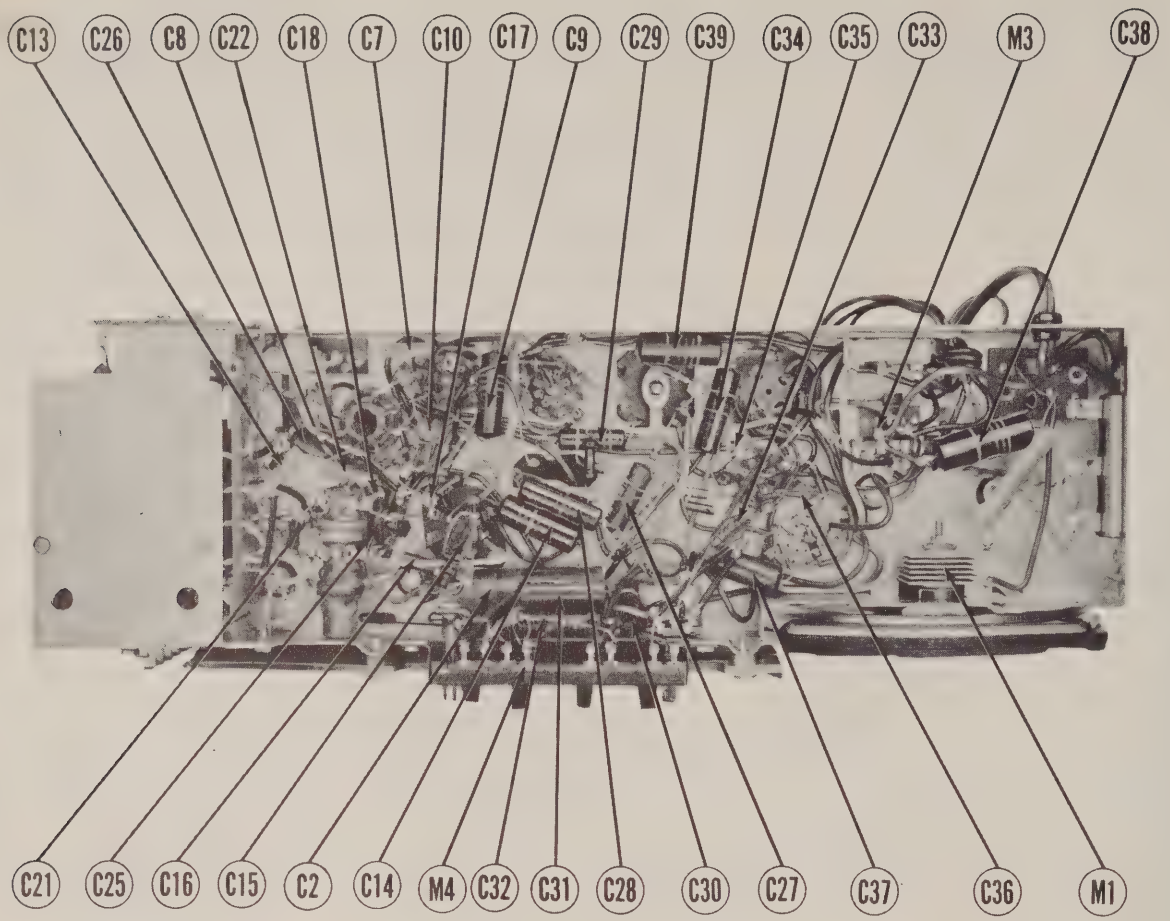
C13
C26
C8
C22
C18
C7
C10
C17
C9
C29
C39
C34
C35
C33
M3
C38
C21
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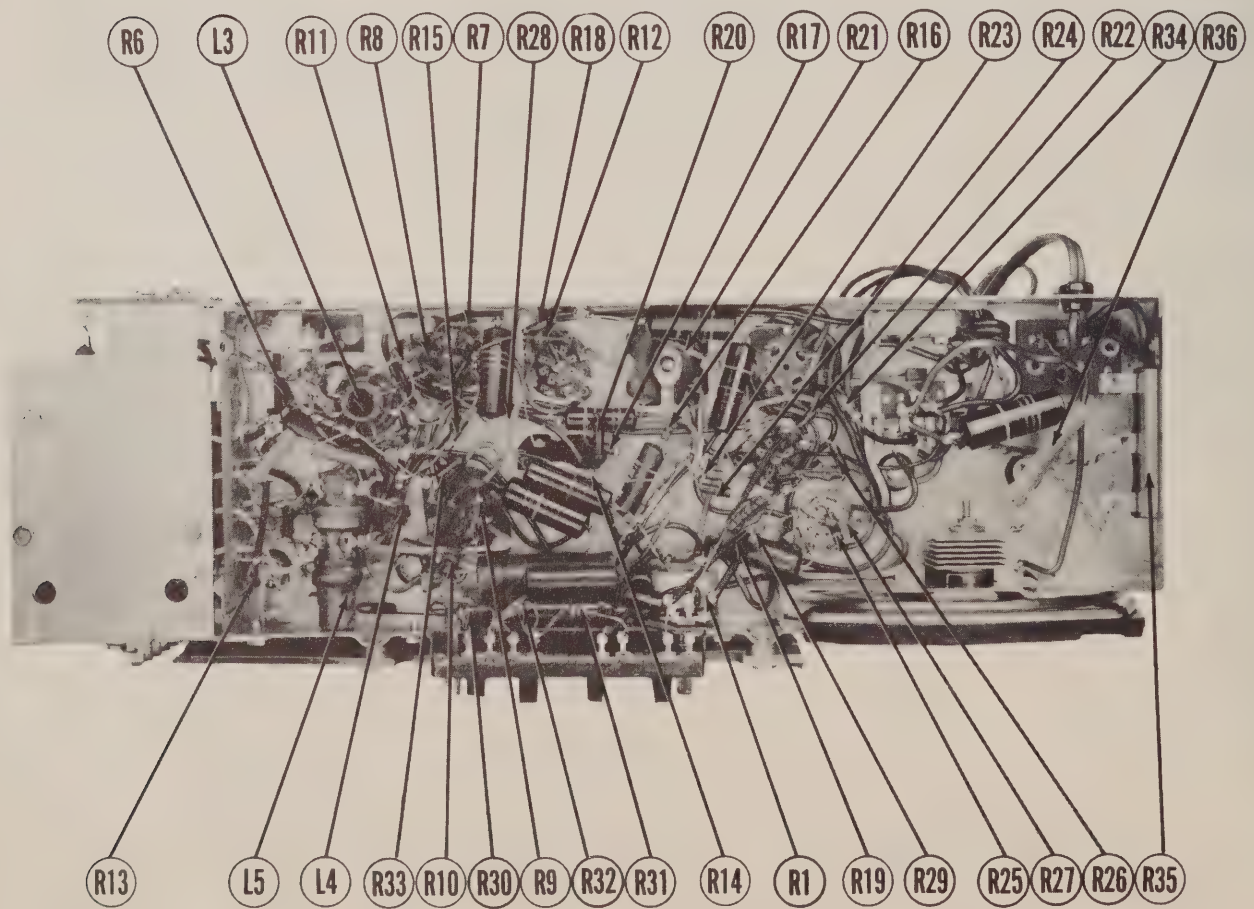
C14
M4
C32
C31
C28
C30
C27
C37
C36
M1


R6
L3
R11
R8
R15
R7
R28
R18
R12
R20
R17
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R23
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R22
R34
R36
R13
L5
L4
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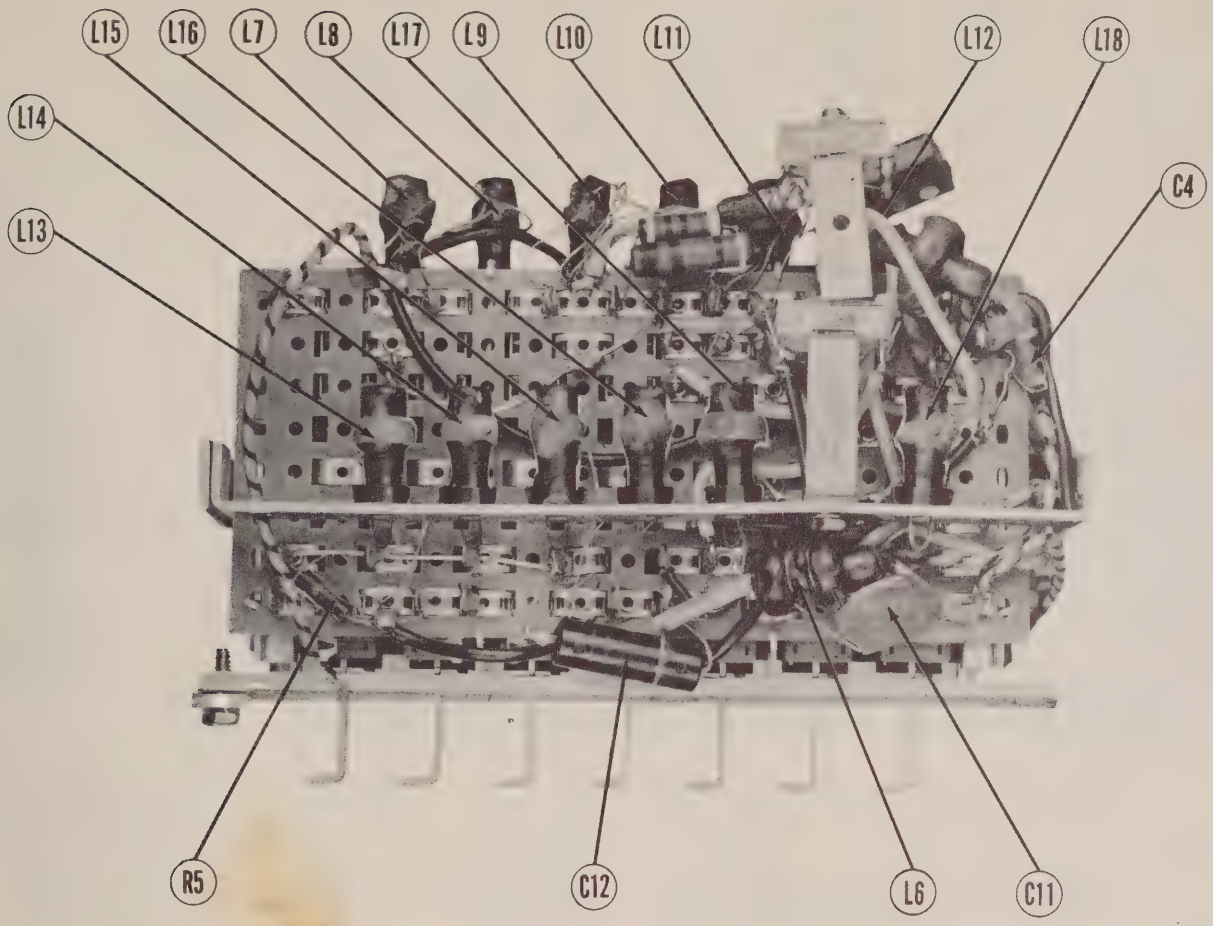
R29
R25
R27
R26
R35


L15
L16
L7
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L17
L9
L10
L11
L12
L18
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C4
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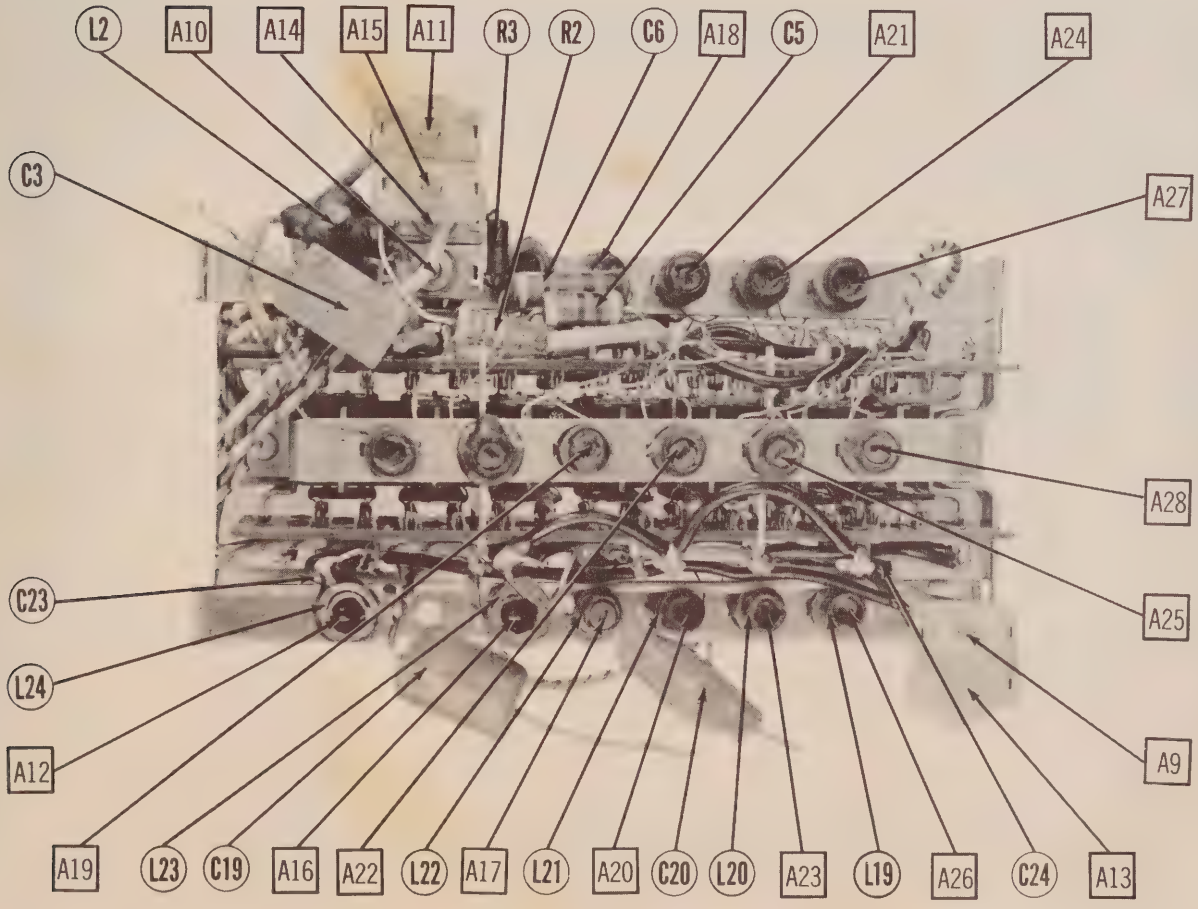
R5
C12
L6
C11


L2
A10
A14
A15
A11
R3
R2
C6
A18
C5
A21
A24
C3
A27
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C23
A25
L24
A9
A12
A19
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C19
A16
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A17
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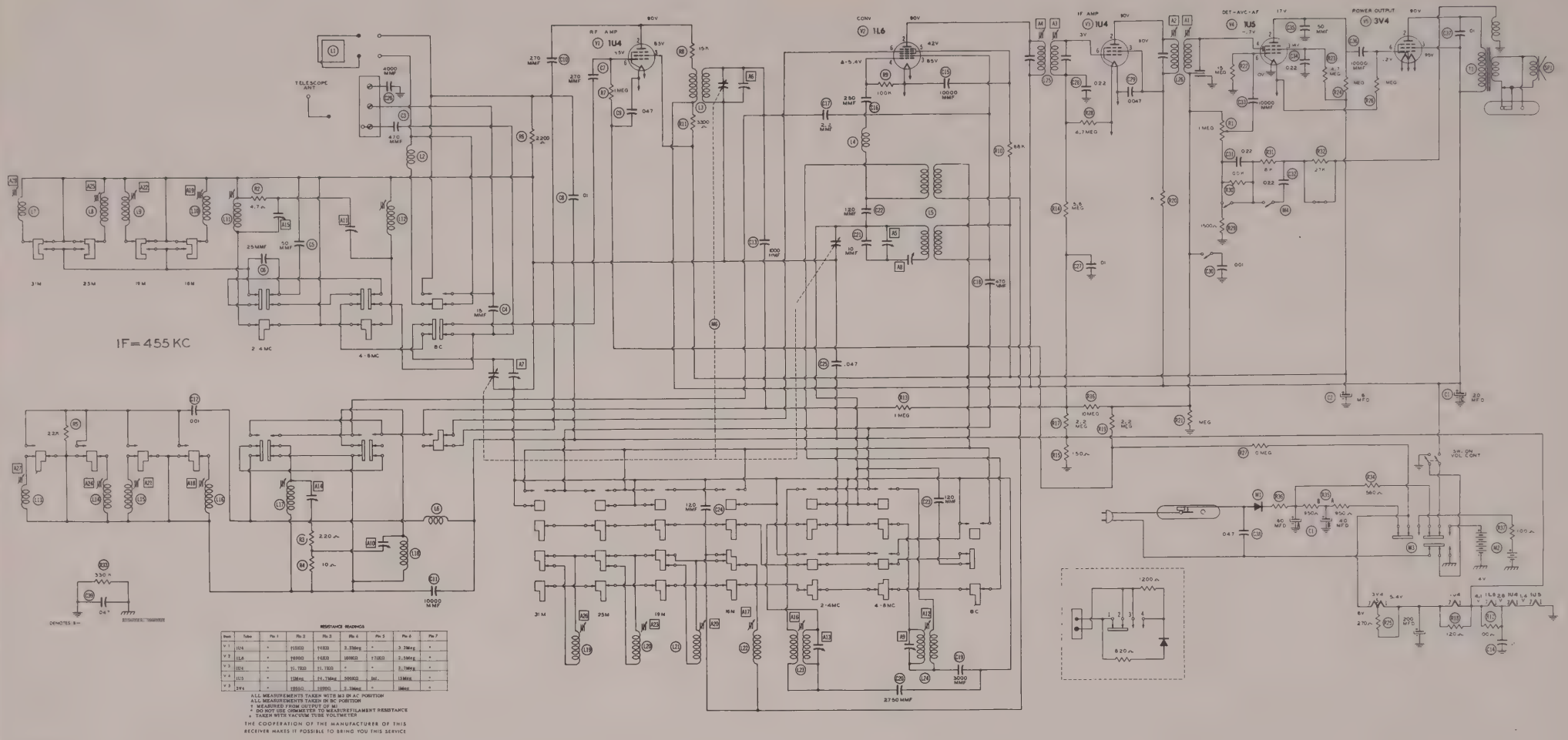
A20
C20
L20
A23
L19
A26
C24
A13



1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	1U4	1U4	6AR	
V2	Converter	1L6	1L6		
V3	IF Amplifier	1U4	1U4	6AR	
V4A	Det.-AVC-AF	1U5	1U5	6BW	
B	Det.-AVC-AF	1S5	1S5	6AU	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	22-1741	AFH4-23		UP64215-X20		R1079	▪ Filter
B	40	150							■ Filter
C	20	150							▲ Decoupling
D	200	10							Fil. Filter
C2	16	150		PRS150/16		BR1615		TVA-1409	Decoupling †
C3	470	500	22-1390	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	RF Coupling
C4	15			SI15	D6-150		GP1K-150	5GA-Q15	RF Coupling
C5	50		22-1761	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	RF Coupling
C6	25		22-1392	SI25	D6-250	5W5Q25	GP1K-250	5GA-Q25	RF Coupling
C7	270	500	22-2058	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	RF Coupling
C8	.01	400	22-1784	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AVC Filter
C9	.047	200	22-1778	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C10	270	500	22-2058	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	RF Coupling
C11	1000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-D1	RF Bypass
C12	.001	600	22-2127	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	RF Coupling
C13	1000		22-1886	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Coupling
C14	.1	200	22-1777	P288-1	DF-104	PTE4P1		2TM-P1	Fil. Bypass
C15	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Conv. Screen
C16	250		22-2126				N750-333-251		Osc. Grid Cap.
C17	2.2		22-1763	SI2.2NP0	TCZ-2.2		NP0K-2R2		Osc. Coupling
C18	470	500	22-1390	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Osc. Feedback
C19	3000	500	22-2281	1467-003	D6-302	1W5D3	GP2-333-302	1FM-23	Fixed Padder
C20	2750	500	22-1433						Fixed Padder
C21	10		22-1953	SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	Fixed Trimmer
C22	120		22-2279		TCZ-120		NP0-333-121		Fixed Padder
C23	120		22-2280	SI120	D6-121	5W5T15	GP2K-121	5GA-T12	Fixed Padder
C24	120		22-2279		TCZ-120		NP0-333-121		Fixed Padder
C25	.047	400	22-1775	P488-047	DF-503	PTE4S5		4TM-S47	RF Bypass
C26	4000		22-4	BPD-004	DD-402	1D5D4	GP2-333-402		Ant. Isolation
C27	.01	400	22-1784	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AVC Filter
C28	.022	200	22-2071	P488-022	DF-203	PTE4S2		2TM-S2	AVC Filter
C29	.0047	400	22-1783	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	IF Amp. Decoupling
C30	.001	600	22-2127	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Tone Comp.
C31	.022	200	22-2071	P488-022	DF-203	PTE4S2		2TM-S2	Tone Comp.
C32	.022	200	22-2071	P488-022	DF-203	PTE4S2		2TM-S2	Tone Comp.
C33	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C34	.022	400	22-2072	P488-022	DF-203	PTE4S2		4TM-S22	AF Amp. Screen
C35	50		22-1674	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	AF Amp. Plate
C36	10000		22-3	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Audio Coupling
C37	.01	600	22-1779	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Output Plate
C38	.047	600	22-1844	P688-047	DF-503	PTE6S5		6TM-S47	Line Filter
C39	.047	400	22-1775	P488-047	DF-503	PTE4S5		4TM-S47	Line Isolation

† Some models use 12MFD. in this application. (Part # 22-2056)

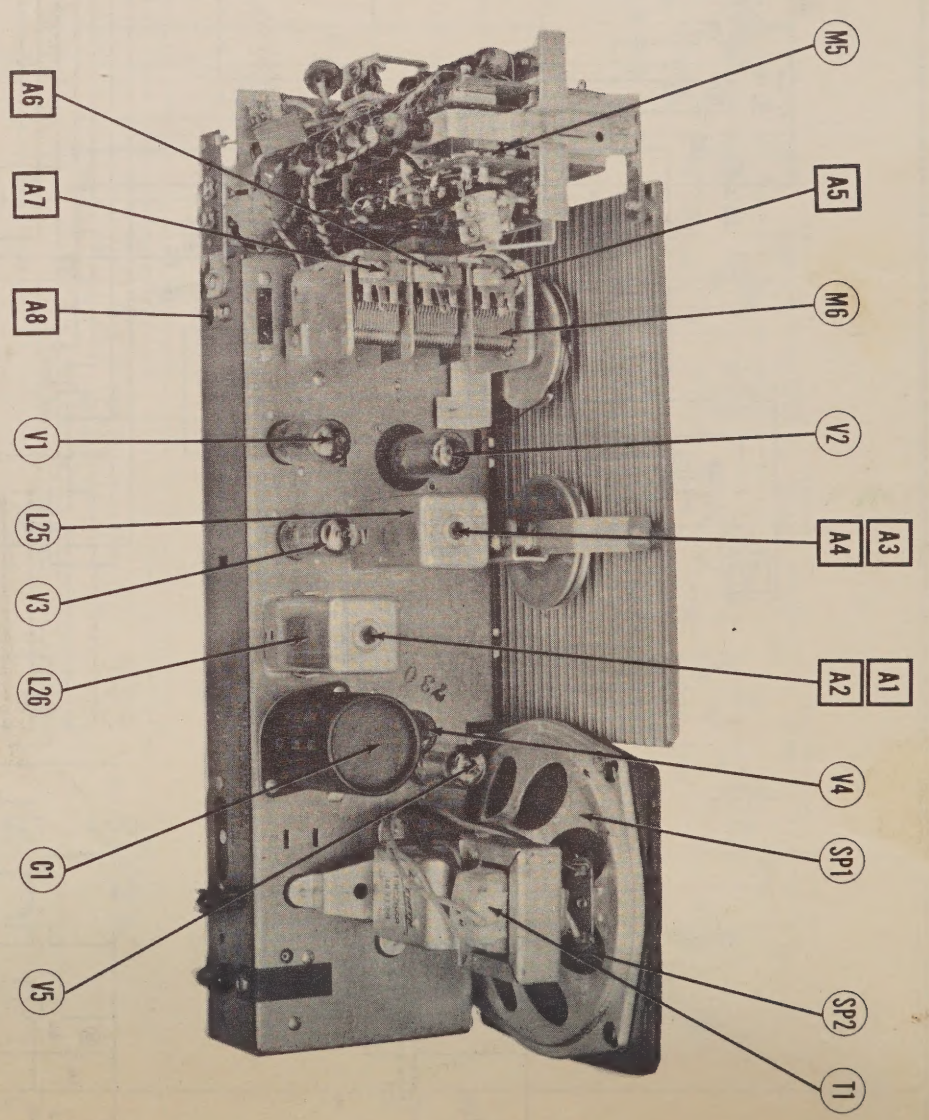
CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2276	Q11-137	AG-61-S	AN-69	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not req.	76-2	SWB-2	K-157	Attach to R1A per instructions

SET 152

FOLDER 12

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	
R2	4.7Ω	½	63-1581		Parasitic Suppressor - Wire Wound
R3	220Ω	½	63-1758		Parasitic Suppressor
R4	10Ω	½	63-1701		Parasitic Suppressor - See Note 1
R5	22KΩ	½	63-1842	BTS-22K	RF Coil Shunt
R6	2200Ω	½	63-1800	BTS-2200	Antenna Isolation
R7	1Meg	½	63-1912	BTS-1Meg	RF Amp. Grid
R8	15KΩ	½	63-1835	BTS-15K	RF Amp. Plate
R9	100KΩ	½	63-1869	BTS-100K	Osc. Grid - See Note 2
R10	68KΩ	½	63-1863	BTS-68K	Osc. Anode
R11	3300Ω	½	63-1807	BTS-3300	Voltage Divider
R12	100Ω	½	63-1743	BTS-100	Filament String
R13	1Meg	½	63-1912	BTS-1Meg	AVC Network
R14	5.6Meg	½	63-1943	BTS-5.6Meg	AVC Network
R15	150Ω	½	63-1750	BTS-150	AVC Network
R16	10Meg	½	63-1954	BTS-10Meg	AVC Network
R17	2.2Meg	½	63-1926	BTS-2.2Meg	AVC Network
R18	120Ω	½	63-1747	BTS-120	Filament String
R19	2.2Meg	½	63-1926	BTS-2.2Meg	AVC Network
R20	1000Ω	½	63-1785	BTS-1000	IF Amp. Decoupling
R21	1Meg	½	63-1912	BTS-1Meg	Detector Diode Load
R22	15Meg	½	63-1961	BTS-15Meg	AF Amp. Grid
R23	4.7Meg	½	63-1940	BTS-4.7Meg	AF Amp. Screen
R24	1Meg	½	63-1912	BTS-1Meg	AF Amp. Plate
R25	270Ω	½	63-1761	BTS-270	Filament String
R26	1Meg	½	63-1912	BTS-1Meg	Output Grid
R27	10Meg	½	63-1954	BTS-10Meg	AVC Network
R28	4.7Meg	½	63-1940	BTS-4.7Meg	AVC Network
R29	1500Ω	½	63-1792	BTS-1500	Tone Compensation
R30	100KΩ	½	63-1869	BTS-100K	Tone Compensation
R31	18KΩ	½	63-1838	BTS-18K	Tone Compensation
R32	27KΩ	½	63-1845	BTS-27K	Tone Compensation
R33	330KΩ	½	63-1891	BTS-330K	Isolation
R34	560Ω	½		BTS-560	Filter
R35A	950Ω	5	63-1362		Filament Dropping - Wire Wound
B	950Ω	5			Filter - Wire Wound
R36	130Ω	5	63-2018		Surge Limiter - Wire Wound
R37	100Ω	½	63-1744	BTS-100	Filament String

Note 1 Not used in all models.
Note 2 Some models use 180KΩ resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	7.2KΩ	3.8Ω	265Ω	.3Ω SEC. 2 13Ω	206-668				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD PM CONE DIA. 5"	V. C. IMP. 3.8Ω V. C. DIA. 9/16"	49-668	ST803 Model P525-V	52A1	
SP2			208-668			

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.		
L1	Loop Ant.	.9Ω		S-17747		BC
L2	Ant. Loading Coil	1.9Ω		S-16047		
L3	RF Coil	7.5Ω	3.7Ω	S-17710		BC
L4	RF Choke	.3Ω		S-14403		
L5A	Osc. Coil	.8Ω	.1Ω	S-17709		BC
B	Osc. Coil	3.6Ω	5.1Ω	S-17709		
L6	RF Choke	3.4Ω		S-11952		
L7	Ant. Coil	.1Ω		S-17721		31M
L8	Ant. Coil	0Ω		S-17720		25M
L9	Ant. Coil	0Ω		S-17719		19M
L10	Ant. Coil	.1Ω		S-17718		16M
L11	Ant. Coil	.6Ω		S-17724		2-4MC
L12	Ant. Coil	0Ω		S-17725		4-8MC
L13	RF Coil	0Ω		S-17717		31M
L14	RF Coil	0Ω		S-17716		25M
L15	RF Coil	0Ω		S-17715		19M
L16	RF Coil	0Ω		S-17714		16M
L17	RF Coil	.7Ω		S-17722		2-4MC
L18	RF Coil	0Ω		S-17723		4-8MC
L19	Osc. Coil	.1Ω		S-17729		31M
L20	Osc. Coil	.1Ω		S-17728		25M
L21	Osc. Coil	0Ω		S-17727		19M
L22	Osc. Coil	0Ω		S-17726		16M
L23	Osc. Coil	.4Ω	.8Ω	S-17731		2-4MC
L24	Osc. Coil	.1Ω	.8Ω	S-17730		4-8MC
L25	Input IF	28Ω	28Ω	95-1148		
L26	Output IF	27Ω	27Ω	95-1149		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	ZENITH PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.067A	212-5	NB-5	5M4	

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V "A" 90V "B"	Z985			752			G6B60	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Switch	85-450	Power Change over
M4	Switch	85-503	Tone
M5	Switch	85-502	Band
M6	Tuning Cap	22-2286	20-476MMF-20-476MMF-20-476MMF
M7	Telescope Ant.		
A9, A13	Trimmer	22-2283	Dual 2-4MC Osc. and 4-8MC Osc.
A10, A14	Trimmer	22-2284	Dual 2-4MC RF and 4-8MC RF
A8	Padder	22-2282	BC Osc. Padder
A11, A15	Trimmer	22-2285	Dual 2-4MC Ant. and 4-8MC Ant.
	Dial Scale	26-457	
	Dial Pointer	59-257	
	Voltage Adapter As.	S-15715	Complete
	Knob	46-913	Tuning and Volume
	Knob	46-912	Band Switch

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer, parallel with base of dial.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD.	High side to pin 6, (Grid), of 1L6, (V2). Low side to B-.	455KC (400% Mod.)	BC (bottom button)	600KC	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolatinn transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1600KC	"	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	"	1400KC	"	A6, A7	"
4.		Loop	600KC	"	600KC	"	A8	Rock tuning gang while adjusting A8 for maximum output.
5.	3ft. of wire	Connect high side of generator to 3ft. of wire placed approximately 1ft. from extended whip atennna. Low side not connect nected.	7.8MC	4-8MC (second button from bottom.)	7.8MC	"	A9, A10 A11	Adjust for maximum output.
6.	"	"	4.2MC	"	4.2MC	"	A12	Rock tuning gang while adjusting A12 for maximum output. Repeat steps 5 and 6.
7.	"	"	3.9MC	2-4MC (third button from bottom)	3.9MC	"	A13, A14, A15	Adjust for maximum output.
8.	"	"	2.1MC	"	2.1MC	"	A16	Rock tuning gang while adjusting A16 for maximum output. Repeat steps 7 and 8.
9.	"	"	17.8MC	16M (fourth button from bottom)	17.8MC	Across voice coil.	A17, A18 A19	Rock tuning gang while adjusting each adjustment for maximum output.
10.	"	"	15.2MC	19M (third button from top)	15.2MC	"	A20, A21 A22	"
11.	"	"	11.8MC	25M (second button from top)	11.8MC	"	A23, A24 A25	"
12.	"	"	9.6MC	31M (top button)	9.6MC	"	A26, A27 A28	"